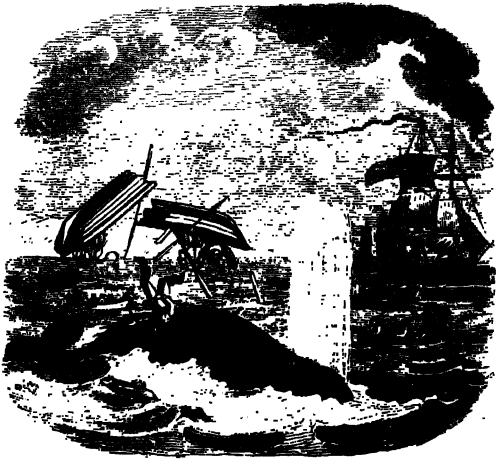
DISCOVERY AND ADVENTURE

IN THE

POLAR SEAS AND REGIONS.



OLIVER AND BOYD, EDINBURGH.

NARRATIVE

OF

DISCOVERY AND ADVENTURE

IN THE

POLAR SEAS AND REGIONS:

WITH ILLUSTRATIONS OF THEIR

CLIMATE, GEOLOGY, AND NATURAL HISTORY;

AND AN ACCOUNT OF

THE WHALE-FISHERY.

BY PROFESSOR LESLIE, PROFESSOR JAMESON,
AND HUGH MURRAY, ESQ. F.R.S.E.

EDINBURGH:
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AND SIMPKIN & MARSHALL, LONDON.
MDCCCXXX.

TO

JOHN BARROW, Esq. F.R.S.,

ONE OF THE SECRETARIES OF THE ADMIRALTY,

THE CHIEF PROMOTER OF DISCOVERY

IN THE

POLAR SEAS AND REGIONS,

THIS WORK IS,

(WITH PERMISSION,)

MOST RESPECTFULLY DEDICATED, BY

THE PUBLISHERS.

PREFACE.

The design of the present work is to exhibit a complete and connected view of the successive voyages made to the Arctic regions. In those climates Nature is marked by the most stupendous features, and the forms which she assumes differ from her appearances in our milder latitudes almost as widely as if they belonged to another planet. There the scenery is awful and dreary, yet abounds in striking, sublime, and even beautiful objects. The career of the navigators, who at various times have traversed the northern seas, amid tempest, darkness, and mountains of floating ice, presents such a series of peril and vicissitude, and has given rise to so many extraordinary displays of intrepidity and heroism, as cannot fail to render most interesting the story of their several adventures. When we consider also, that in this field of discovery England laid the foundation of her maritime pre-eminence, and that the men who have earned the greatest glory in it have been chiefly British, it will be admitted that the History of Northern Navigation must have a peculiar charm for the English reader.

The narrative of these Voyages has been carefully drawn from the most authentic sources, by Mr Hugh Murray; and the most distinguished men of science in Scotland have lent their aid to illustrate that wonderful order of nature which prevails within the Arctic Circle. Professor Leslie has commenced the volume with a full examination of the Climate and its Phenomena,—subjects so prominent in those high latitudes, that, without a preliminary knowledge of them, the progress of discovery would be but imperfectly understood. A general Survey of all that is known of the Geological Structure of the same interesting regions is given by Professor Jameson. The chapter on Natural History, though it treats the subject rather in a popular then in a scientific manner, has received the careful revision of a distinguished naturalist.

The Whale-fishery forms an essential branch of the present work. Of its daring operations, and its various perils—as they occur in the depth of the Polar seas—the description here introduced may be the more acceptable, as it is presumed to be the only one hitherto attempted within a moderate compass.

It might, perhaps, be expected that this work should embrace an account of the expeditions performed, by land or in boats, to ascertain the northern boundaries of America and Asia: such a narrative, however, was found quite incompatible with the object of the present undertaking. The relation of these enterprises may find a place in some future volumes devoted expressly to the history of adventure on the remote shores of those two continents.

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POLAR

SEAS AND REGIONS.

CHAPTER I.

The Climate of the Polar Regions.

The climate and seasons within the Arctic circle exhibit most peculiar and striking features, which modify in a singular manner the whole aspect of nature. An investigation of those phenomena seems therefore necessary for enabling the reader to comprehend the narrative, and to follow through such icy regions the paths of the daring navigators. And the more fully to elucidate the subject, it will be proper to give some explication of the principles that regulate generally the distribution of heat over the surface of our globe.

Many of the facts relating to the Polar climate have been collected in the course of the bold and arduous attempts to penetrate to India across the northern seas. Projects of this kind, after being long suspended, were, in 1818, renewed, and embraced with peculiar ardour by the English government. For two or three years previous to 1818, the captains of ships employed in the northern whale-fishery had generally concurred in representing the Arctic sea as of a sudden become almost open and accessible to the adventurous navigator. By the more speculative relators, it had been supposed that the vast icy barrier which, for many ages, obstructed those forlorn regions, was at last, by some revolution of our globe, broken up and dispersed. The project of finding a north-west passage to Asia,—a project so often attempted and so long abandoned,—was by consequence again revived; and the more daring scheme of penetrating to the Pole itself had likewise been seriously proposed. Of the complete success of either plan, the hopes of sober thinkers were indeed extremely slender; yet the prospect held forth seemed to be more inviting, on the whole, than at any former period when such bold undertakings had been attempted. The discovery of a north-west passage, were it ever attainable, could hardly, it is true, be of any real benefit to our commerce; since, in such high latitudes, where only it must be sought for, it would at all times be very precarious, and liable to interruption from the prevalence of ice. The scheme of actually reaching that northern point on the surface of our globe, which terminates its axis of rotation, however interesting in a philosophical view, can only be regarded as an object of pure curiosity, and not likely to lead to any useful or practical results. Yet was it befitting the character of a great maritime nation to embrace every chance of improving geographical knowledge, and of extending the basis of natural science.

The books and memoirs which contain the latest accounts of the state of the northern seas, either suggested the enterprise then pursued, or were brought forward in consequence of its adoption. Mr Daines Barrington, a man of learning and some ingenuity, embraced with ardour the opinion of the possibility of approaching to the Pole. In successive papers communicated to the Royal Society of London, he not only condensed the information furnished by the older voyagers, but exhibited the results of the numerous queries relating to the same object, which he had circulated among persons engaged in the Greenland fishery. He thus proved, that, in certain favourable seasons, the Arctic seas are for several weeks so open, that intrepid navigators might safely penetrate to a very high latitude. In compliance with his sanguine representations, the Admiralty in 1773 despatched Captain Phipps to explore those regions; but this commander was unsuccessful in the attempt, having reached only the latitude of 80½ degrees, when his ship got surrounded by a body of ice near Spitzbergen, and escaped with extreme difficulty, though many of the whalers had in that summer advanced farther. Mr Barrington did not, however, despair; and, following out his views, he induced Mr Nairne and Dr Higgins to make experiments on the congelation of sea-water. The various facts were collected in a small volume, to which Colonel Beaufoy subjoined an appendix, containing the answers made to his queries by Russian hunters, (who are accustomed to spend the whole year in Spitzbergen,) relative to the probability of travelling from that island to the Pole during winter, in sledges drawn by rein-deer. The reports of these hardy men were sufficiently discouraging. They pictured the winter at Spitzbergen as no only severe but extremely boisterous, the snow falling to the depth of three or five feet, and drifting so much along the shores by the violence of the winds as often to block up all communication. The danger of being surprised and overwhelmed by clouds of snow, raised in sudden gusts, was so great, that they never ventured to undertake any long journeys over the ice. Nor did they think it at all practicable to have loaded sledges dragged over a surface so rough and hilly, by the force of rein-deer or dogs.

The speculations of Mr Scoresby had more than ordinary claims to attention, as exhibiting the conclusions of a most diligent, accurate, and scientific observer. Trained from infancy to the navigation of the frozen seas, under the direction of his father, a most enterprising and successful leader, he conjoined experience with ingenuity and judgment. For several years, during the intervals of his Greenland voyages, he prosecuted a regular course of study, which enriched his mind with liberal attainments, and gave a new impulse to his native ingenuity and ardour. It was exceedingly to be regretted that any jealousies or official punctilios should have prevented government from intrusting the principal command of the Polar expedition to him who not only proposed it originally, but whose talents and science, joined to his activity, perseverance, and enthusiasm, afforded assuredly the best promise of its ultimate success.

Hans Egede, a benevolent enthusiast, formed a plan of reclaiming the natives of Greenland from the errors of Paganism. After various ineffectual attempts, he at last procured, by subscription, the sum of £2000, with which he purchased a vessel, and carried his family and forty settlers to Baal's river, in the 64th degree of north latitude, where he landed on the 3d of July, 1721. He was afterwards appointed missionary, with a small salary by the Danish government, which occasionally granted some aid to the colony. During his stay, which lasted till 1736, he laboured with great zeal in his vocation. In 1757, the year before his death, he printed his *Description of Greenland*, in the Danish language, at Copenhagen. A translation of that work, much improved and enlarged, with useful additions by the editor, contains valuable information, tinged with a large portion of credulity.

It is remarkable, that two centuries of extreme activity should have added so very little to our knowledge of the Arctic regions. The relations of the earlier navigators to those parts possess an interest which has not been yet eclipsed. The voyage of Martens from Hamburg to Spitzbergen may be cited as still the most instructive. But the best and completest work on the subject of the northern fisheries, is a treatise in three volumes octavo, translated from the Dutch language into French by Bernard de Reste, and published at Paris in 1801, under the title *Histoire des Pêches, des Découvertes, et des Etablissemens des Hollandais dans les Mers du Nord.*

The Arctic expedition, which in 1818 attracted the attention of the public, proposed two distinct objects, —to advance towards the Pole—and to explore a north-west passage to China. These were no doubt splendid schemes; but, in order to form a right estimate of the plan and some anticipation of its probable results, it was necessary to proceed with caution, and employ the lights of science to guide our steps. The facts alleged, respecting the vast islands or continents of ice recently separated and dispersed from the Arctic regions, gave occasion to much loose reasoning, to wild and random conjectures, and visionary declamation. Glowing anticipations were confidently formed of the future amelioration of climate, which would scarcely be hazarded even in the dreams of romance. Every person possessing a slight tincture of physical science, conceived himself qualified to speculate concerning the phenomena of weather, in which he feels a deep interest; and hence a very flimsy and spurious kind of philosophy, however trifling or despicable it may appear in the eyes of the few who are accustomed to think more profoundly, gained currency among certain classes of men, and engendered no small share of conceit. Meteorology is a complex science, depending on so many subordinate principles, that require the union of accurate theory with a range of nice and various observations, as to have advanced very slowly towards perfection.

With regard to the nature and real extent of the change which had taken place in the condition of the icy seas, the reports have no doubt been greatly exaggerated. To reduce them to their just amount, it would be necessary to estimate the annual effects produced in those regions, and likewise to compare the observations of a similar kind made by experienced navigators at former periods. From a critical examination of the various facts left on record, it will perhaps appear, that those Arctic seas have been more than once, in the course of the last half century, as open as they are now represented.

To discuss with accuracy the question of the periodical formation and destruction of the Polar ice, it becomes necessary to explain the true principles which regulate the distribution of heat over the globe. This I shall attempt to perform, independent of every hypothesis, by a direct appeal to experiment and observation.

If, at any place we dig into the ground, we find, by the insertion of a thermometer, that, as we successively descend, we approach constantly to some limiting temperature, which below a certain depth continues unchanged. This depth of equilibrium varies in different soils; but seldom exceeds thirty or fifty feet. If the excavation be made about the commencement of winter, the temperature will appear to increase in the lower strata; but, on the contrary, if the pit be formed in the beginning of summer, it will be found to grow colder as we descend.* Hence, the mass of the earth merely transmits very slowly the impressions of heat or of cold received at its surface. The external temperature of any given day will perhaps take near a month to penetrate only one foot into the ground. By digging downwards in summer, we soon reach, therefore, the impressions of the preceding spring and winter; but the same progress into the ground brings us back to the temperatures of the autumn and of the summer. Still lower, all the various fluctuations of heat become intermingled and confounded in one common mean.

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* In the dreary climate of Hudson's Bay, it is remarked by the residents, that, even during the summer months, in digging through the ground for a grave, they always come at the depth of a few feet to a stratum of frozen earth. A singular feature of the remoter Arctic tracts is the frequent appearance of *red snow*. This deception is occasioned by the interspersed multitudes of minute plants, now termed *Protococcus Nivalis*, a species of *Algæ*, which penetrate to a great depth through the snow, and vegetate in the severest weather.

Such observations are more easily and correctly made, by having thermometers, with long stems, sunk to different depths in the ground; and from an extensive register we may conclude, that the temperature of the ground is always the mean result of the impressions made at the surface during a series of years. The successive strata, therefore, at great depths, may be regarded as permanent records of the average state of the weather in distant ages. Perhaps the superficial influence will scarcely descend fifty feet in the lapse of a century. Copious springs, which percolate the bowels of the earth, and rapidly convey the impressions of subterranean heat to the surface, will consequently furnish the most accurate reports of the natural register of climate. These, if rightly chosen, differ not sensibly in their temperature at all seasons; and, whether they have their seat at a depth of one hundred or of five hundred feet, they affect the thermometer alike.* We are hence entitled to conclude, that however the weather may have varied from year to year, or changed its character at intervals of short periods of years, it has yet undergone no material alteration during the efflux of many ages.

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* The celebrated fountain of Vaucluse, situate in the latitude of 43° 55′, and 360 feet above the level of the Mediterranean Sea, has been observed to acquire its highest temperature about the first day of September, and to reach the lowest at the beginning of April, the former being 56°.3, and the latter 54°.1 by Fahrenheit's scale; which gives 55°.2 for its mean heat. The waters are collected from the fissures of an extensive limestone rock, and seem to receive the superficial impressions in the space of three months. They burst forth with such a

Some philosophers attempt to explain such facts as are now stated, from the supposed internal heat of the globe, caused by the action of central fires; and pretend, in support of their favourite hypothesis, that the temperature always increases near the bottom of very deep mines. But this observation holds only in particular situations, where the warm exhalations from the burning of lamps and the breathing of the workmen are collected and confined under the roofs of the galleries. In the case of a deep open pit, the effect is quite reversed, the bottom being always colder than the mean temperature. This is owing to the tendency of the chill air to descend by its superior density. The superficial impressions of heat and cold are thus not sent equally downwards; so that the warmth of summer is dissipated at the mouth of the pit, while the rigours of winter are collected below. A similar modification of temperature we shall find occurs in profound lakes, in consequence of the disposition of the colder and denser portions of the water always to sink down.

The permanent heat of the ground is, therefore, produced by the mere accumulation of incessant external impressions. These impressions are received, either directly from the sun's rays, or circuitously, through the medium of atmospheric influence. But

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volume as to form, only a few yards below their source, the translucid Sorgue, a river scarcely inferior in its discharge to the Tay above Perth.

air is better fitted for diffusing than for storing up heat. The whole mass of the atmosphere, it may be easily shown, does not contain more heat than a stratum of water only ten feet thick, or one of earth measuring fifteen feet. According to their relative temperature, the winds, in sweeping along the ground, either abstract or communicate warmth. But the sun is the great and original fountain of heat, which the internal motion excited in the atmosphere only serves to distribute more equally over the earth's surface. The heat imparted to the air, or to the ground, is always proportional to the absorption of the solar beams; and the results are hence still the same, whether we embrace the simple theory, that heat is only the subtle fluid of light, in a state of combination with its substratum; or prefer the opinion, that light has always conjoined with it a certain admixture of the invisible matter of heat.

Owing to the spherical form of the earth, and the obliquity of its axis, very different quantities of light or heat are received in the several latitudes. The same portion of heat which would raise the temperature of 135 pounds of water a degree on Fahrenheit's scale, is only capable of melting one pound of ice. The measure of ice dissolved is, therefore, the simplest and most correct standard for estimating the quantity of heat expended in that process. If we apply calculation to actual experiment, we shall find that the entire and unimpaired light of the sun would, at the Equator, at the mean latitude of 45°, and at the Pole, be sufficient to melt a thickness of ice expressed by 38.7, 25.9, and 13.4 feet. Of this enormous action, the greatest portion is no doubt wasted in the vast abyss of the ocean; and, of the remain-der, a still larger share is perhaps detained and dissipated in the upper atmosphere, or projected again in a soft phosphorescence. Yet the light which, after those defalcations, finally reaches the surface of the earth, if left to accumulate there, would create such inequality of temperature as must prove quite insupportable.

The slow conducting quality of the ground, if not altered by extraneous influence, would fix the heat where it was received, and thus perpetuate the effect of the unequal action of the sun's beams. The mobility of the atmosphere hence performs an important office in the economy of nature, as a great regulator of the system, dispensing moderate warmth, and attempering the extremities of climate over the face of the globe. As the heat accumulates within the tropics, it will occasion currents of cold air to rush from the higher latitudes. But the activity of the winds thus raised, being proportional to their exciting cause, must prevent it from ever surpassing certain limits. A perpetual commerce of heat between the Poles and the Equator is hence maintained, by the agency of opposite currents in the atmosphere. These currents will often have their direction modified; and they may still produce the same effects, by pursuing an oblique or devious course. The actual phenomena of climate only require the various winds, throughout the year, to advance southwards or northwards at the mean rate of almost two miles an hour, or to perform in effect three journeys of transfer annually from the Equator to either Pole. Not that these currents carry the impressions of heat or cold directly from one extremity of the globe to the other, but, by their incessant play, they contribute, in the succession of ages, to spread them gradually over the intervening space.

The system of opposite aërial currents leads to the same law of the gradation of temperature in different latitudes, as the celebrated Professor Mayer of Göttingen deduced from an empirical process. It would appear that the variation of the mean temperature at the level of the sea is always proportional to the sine of twice the latitude. Thus, for the parallels of every five degrees, the arrangement is simple:—

Latitude.	Mean Temperature.	Latitude.	Mean Temperature.
0°	84°	50°	53°.5
5°	83°.8	55°	49°.2
10°	82°.4	60°	45°.0
15°	80°.7	65°	41°.3
20°	77°.9	70°	38°.1
25°	74°.9	75°	35°.5
30°	70°.9	80°	33°.6
35°	67°.0	85°	32°.4
40°	62°.4	90°	32°
45°	58°.0		*

The arithmetical mean, or 58°, corresponds to the middle latitude of 45°; but the real mean of the

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* Perhaps the gradation of temperature would, in the higher latitudes, require a small modification. Instead of assuming 32° as the medium at the Pole, it might be more exact to adopt 28°, or the melting point of the ice of sea-water. But the recent voyagers have registered the coldness in advancing northwards as much more intense. It is evident, however, that their thermometrical observations must be affected by some latent and material inaccuracy. Were the mean temperature of the Arctic regions really below the point of saline congelation, the annual formation of ice in those seas would exceed the quantity dissolved, and therefore the extension of the frozen fields would, contrary to fact, be constantly progressive.

temperature over the whole surface of the globe is 67°, which should occur on the parallel of 35° 51½′.

The system of currents maintained in the atmosphere likewise contributes essentially, by its unceasing agency in transferring and dispersing heat, to prevent the excessive inequality of seasons in the higher latitudes. But the motions produced in such a vast mass of fluid must evidently follow, at long intervals, the accumulated causes which excite them. Hence probably the origin of those violent winds which, succeeding to the sultry warmth of summer and the sharp frosts of winter, prevail in the months of September and March, and are therefore called by seamen the *Equinoctial Gales*. In the Arctic seas nature has made a further provision for correcting the excessive irregularity of the action of the sun's rays. This luminary, for several months in winter, is totally withdrawn from that dreary waste; but, to compensate for his long absence, he continues during an equal period in summer to shine without interruption. Now, from a beautiful arrangement, the surface of the ocean itself, by its alternate freezing and thawing, presents a vast substratum, on which the excesses of heat and of cold in succession are mutually spent. In ordinary cases, the superficial water, as it cools and therefore contracts, sinks down into the abyss by its superior gravity; but when it grows warmer it expands, and consequently floats incumbent, communicating afterwards its surplus heat with extreme slowness to the mass below. But the seas within the Arctic circle being always near the verge of congelation, at which limit water scarcely undergoes any sensible alteration of volume even from a considerable change of temperature, the superficial stratum remains constantly stagnant, and exposed to receive all the variable impressions of the sweeping winds. The piercing cold of winter, therefore, spends its rage in freezing the salt water to a depth proportional to its intensity and continuance.* The prolonged warmth of summer again is consumed in melting those fields of ice, every inch of which in thickness requiring as much absorption of heat as would raise the temperature of a body of water 10½ feet thick a whole degree. The summer months are hence nearly gone before the sun can dissolve the icy domes, and shoot with entire effect his slanting rays. It may be shown, that under the Pole the action of the solar light is, at the time of the solstice, one-fourth part greater *than at the equator, and sufficient in the course of* a day to melt a sheet of ice an inch and a half thick.

If horizontal winds serve to balance the unequal action of the solar beams over the surface of the globe, the rising and descending currents excited in the body of the atmosphere still more effectually maintain the equilibrium of day and night. After the ground has become heated by the direct illumination of the sun, it warms the lowest portion of the incumbent air, which, being thus dilated, begins to ascend, and therefore occasions the descent of an equal portion of the fluid. But these vertical currents, being once created, will continue their motion long after the primary cause has ceased to impel them, and may protract, during the night, the accumulation of chilled air on the surface of the earth. This effect is further augmented, in general, by the frigorific impressions which are at all times darted downwards from a clear sky.* By the operation of this combined system, therefore, the diurnal vicissitudes of temperature are diminished in the temperate and torrid zones. Another consequence results from such rapid and continual interchange of the higher and lower strata, that the same absolute quantity of heat must obtain at every altitude in the atmosphere.

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* At Melville Island, in the latitude of 74° 45′, Captain Parry observed ice to form, of a thickness from three to five inches, around the ship's sides, in the space of twenty-four hours; and in one instance it gained in that time the thickness of 7½ inches, Fahrenheit's thermometer being then 12° below zero. Such power of congelation, it might be computed, would require the full refrigerating action of a stratum of air at that temperature, and rather more than a mile in height.

This equal distribution of heat at all elevations is moulded, however, by another principle, which causes the regular gradation upwards of a decreasing temperature. In fact, air is found to have its capacity for heat enlarged by rarefaction; so that any portion of the fluid carried to the higher regions, where it by consequence expands, will have its temperature proportionally diminished. The decrease of temperature in ascending the atmosphere is not far from being uniform, at the rate of about one degree for every hundred yards of elevation. Hence the limit of perpetual congelation forms a curve, which is nearly the same as the *Companion of the Cycloid,* bending gradually from the equator, reverting its inflexure at the latitude of 45°, and grazing the surface at the Pole. The mean heights of eternal frost, under the equator, and at the latitudes of 30° and 60°, are respectively 15207, 11484, and 3818 feet.

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* See Supplement to the Encyclopædia Britannica, vol. iii. part i. p. 177; or Transactions of the Royal Society of Edinburgh, vol. viii. part ii. p. 465.

It is important to remark, that the heat of large collections of water will seldom agree precisely with the mean temperature corresponding to the latitude. The variable impressions received at the surface from the atmosphere will not, as on land, penetrate slowly into the mass, and become mingled and equalized at a moderate depth. Heat is conducted through liquids chiefly by the internal play resulting from their partial expansion. In the more temperate regions of the globe, the superficial waters of lakes or seas, as they grow warmer, and, therefore, specifically lighter, still remain suspended by their acquired buoyancy. But whenever they come to be chilled, they suffer contraction, and are precipitated by their greater density. Hence the deep water, both of lakes and of seas, is always considerably colder than what floats at the surface. The gradation of cold is distinctly traced to the depth of twenty fathoms, below which the diminished temperature continues nearly uniform as far as the sounding-line can reach. In shallow seas, however, the cold substratum of liquid is brought nearer to the top. The increasing coldness of water, drawn up from the depth of only a few fathoms, may hence indicate to the navigator who traverses the wide ocean his approach to banks or land.

These principles, however, will not apply to the peculiar circumstances of the Arctic seas. Water differs essentially, in its expansion by heat, from mercury, oil, or alcohol: Far from dilating uniformly, a property which fits the latter substances for the construction of thermometers, it swells from the point of congelation, or rather a very few degrees above it, with a rapid progression, to that of boiling. Near the limit of its greatest contraction, the volume of water is scarcely affected at all by any alteration of heat. When the surface of the ocean is depressed to a temperature between 28 and 44 degrees of Fahrenheit's scale, it will remain almost stagnant, and therefore exposed to the full impression of external cold. Hence the Polar seas are always ready, under the action of any frosty wind, to suffer congelation. The annual variations of the weather are in those seas expended on the superficial waters, without disturbing the vast abyss below. Contrary to what takes place under milder skies, the water drawn up from a considerable depth is often warmer within the Arctic circle than what lies on the surface. The floating ice accordingly begins to melt generally on the under side, from the slow communication of the heat sent upwards.

These deductions are confirmed by the nice results of astronomical observations. Any change in the temperature of our globe would occasion a corresponding mutation of volume, and consequently an alteration in the momentum of the revolving mass. Thus, if, from the accession of heat, the earth had gained only a millionth part of linear expansion, it would have required an increase of five times proportionally more momentum to maintain the same rotation. On this supposition, therefore, the diurnal revolution would have been retarded at the rate of three seconds in a week. But the length of the day has certainly not varied one second in a year since the age of Hipparchus; for we cannot imagine that the ancient observations could ever deviate an hour from the truth. We may hence conclude that, in the lapse of three thousand years, the mass of our globe has not acquired the ten millionth part of expansion, which the smallest fraction of a degree of heat would have communicated.

The accumulation of ice on the surface of the ocean would likewise have occasioned a prolongation of the length of the day. This effect would no doubt be diminished under the Arctic circle, from the proximity of the glacial protuberance to the axis; but its influence would cause a notable difference.

After the continued action of the sun has at last melted away the great body of ice, a short and dubious interval of warmth occurs. In the space of a few weeks, only visited by slanting and enfeebled rays, frost again resumes his tremendous sway. It begins to snow as early as August, and the whole ground is covered, to the depth of two or three feet, before the month of October. Along the shores and the bays, the fresh water, poured from rivulets, or drained from the thawing of former collections of snow, becomes quickly converted into solid ice. As the cold augments, the air deposits its moisture in the form of a fog, which freezes into a fine gossamer netting or spicular icicles, dispersed through the atmosphere and extremely minute, that might seem to pierce and excoriate the skin. The hoar frost settles profusely, in fantastic clusters, on every prominence. The whole surface of the sea steams like a limekiln,—an appearance called the *frost-smoke,* caused, as in other instances of the production of vapour, by the water's being still relatively warmer than the incumbent air. At length the dispersion of the mist, and consequent clearness of the atmosphere, announce that the upper stratum of the sea itself has cooled to the same standard; a sheet of ice spreads quickly over the smooth expanse, and often gains the thickness of an inch in a single night. The darkness of a prolonged winter now broods impenetrably over the frozen continent, unless the moon chance at times to obtrude her faint rays, which only discover the horrors and wide desolation of the scene. The wretched settlers, covered with a load of bear-skins, remain crowded and immured in their hut, every chink of which they carefully stop against the piercing external cold; and, cowering about the stove or the lamp, they seek to doze away the tedious night. Their slender stock of provisions, though kept in the same apartment, is often frozen so hard as to require to be cut by a hatchet. The whole of the inside of their hut becomes lined with a thick crust of ice; and, if they happen for an instant to open a window, the moisture of the confined air is immediately precipitated in the form of a shower of snow. As the frost continues to penetrate deeper, the rocks are heard at a distance to split with loud explosions. The sleep of death seems to wrap up the scene in utter and oblivious ruin.*

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* "The sound of voices which, during the cold weather, could be heard at a much greater distance than usual, served now and then to break the silence which reigned around us; a silence far different from that peaceable composure which characterizes the landscape of a cultivated country; it was the death-like stillness of the most dreary desolation, and the total absence of animated existence." PARRY. During the winter at Melville Island, people were

At length the sun reappears above the horizon; but his languid beams rather betray the wide waste than brighten the prospect. By degrees, however, the farther progress of the frost is checked. In the month of May, the famished inmates venture to leave their hut, in quest of fish on the margin of the sea. As the sun acquires elevation, his power is greatly increased. The snow gradually wastes away—the ice dissolves apace—and vast fragments of it, detached from the cliffs, and undermined beneath, precipitate themselves on the shores with the crash of thunder. The ocean is now unbound, and its icy dome broken up with tremendous rupture. The enormous fields of ice, thus set afloat, are, by the violence of winds and currents, again dissevered and dispersed. Sometimes, impelled in opposite directions, they approach, and strike with a mutual shock, like the crush of worlds,—sufficient, if opposed, to reduce to atoms, in a moment, the proudest monuments of human power. It is impossible to picture a situation more awful than that of the poor crew of a whaler, who see their frail bark thus fatally enclosed, expecting immediate and inevitable destruction.

Before the end of June, the shoals of ice in the Arctic seas are commonly divided, scattered, and dissipated. But the atmosphere is then almost continually damp, and loaded with vapour. At this season of the year, a dense fog generally covers the

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heard conversing at the distance of a mile. This was no doubt owing partly to the density of the frigid atmosphere; but chiefly to the absence of all obstruction in a scene of universal calm and darkness.

surface of the sea, of a milder temperature indeed than the frost-smoke, yet produced by the inversion of the same cause. The lower stratum of air, as it successively touches the colder body of water, becomes chilled, and thence disposed to deposit its moisture. Such thick fogs, with mere gleams of clear weather, infesting the northern seas during the greater part of the summer, render their navigation extremely dangerous. In the course of the month of July, the superficial water is at last brought to an equilibrium of temperature with the air, and the sun now shines out with a bright and dazzling radiance. For some days before the close of the summer, such excessive heat is accumulated in the bays and sheltered spots, that the tar and pitch are sometimes melted, and run down the ship's sides.

Notwithstanding the shortness of the summer in the high latitudes, the air on land becomes often oppressively sultry. This excessive heat, being conjoined with moisture, engenders clouds of mosquitoes, from the stings of which the Laplanders are forced to seek refuge in their huts, where they envelope themselves in dense smoke. Humidity marks the general character of the Arctic regions, which are covered during the greater part of the year with chilling fogs. The sky seldom appears clear, except for a few weeks in winter, when the cold at the surface becomes most intense. Yet the rigour of that season is not felt so severely as the thermometer would indicate. When the temperature is lowest, the air is commonly calm, and, therefore, abstracts less heat from the body than the exposure to a strong wind of much inferior coldness. The providence of the natives serves to mitigate the hardships they have to suffer. The Esquimaux, on the approach of winter, cut the hard ice into tall square blocks, with which they construct regular spacious domes, connected with other smaller ones, for the various purposes of domestic economy. They shape the inside with care, and give it an even glossy surface by the affusion of water. The snowy wall soon becomes a solid concrete mass, which, being a slow conductor, checks the access of cold, while it admits a sufficient portion of light. It may also be remarked, that the external darkness prevails only during a part of the day. Since twilight obtains whenever the sun is less depressed than 18 degrees below the horizon, the limits of entire obscuration occur in the latitudes of 84½° and 48½°; in the former at mid-day in the winter solstice, and in the latter at midnight in the solstice of summer. Between these extremes the atmosphere at the opposite seasons glows to a greater or a less extent, from the middle of the day or of the night. Accordingly, Captain Parry's party, during their detention at Melville Island, in the latitude of 74° 40′, found, that in clear weather, about noon, they could easily, in the depth of winter, read the smallest print on deck. This position corresponds to the alternating parallel of 58° 20′, which nearly reaches Orkney, where the transparency of the nights in the height of summer is well known. The approach of twilight is, besides, advanced in the frozen regions by the superior refractive power of a very dense atmosphere. The horizontal refraction usually raises the lower limb of the sun and moon about the twelfth part of their diameters, and often gives it a wavy and fantastic outline. Hence the reappearance of those luminaries is hastened within the Arctic circle, though the quantity of anticipation has been much exaggerated.

The ice which obstructs the navigation of the Arctic seas consists of two very different kinds; the one produced by the congelation of fresh, and the other by that of salt water. In those inhospitable tracts, the snow which annually falls on the islands or continents, being again dissolved by the progress of the summer's heat, pours forth numerous rills and limpid streams, which collect along the indented shores, and in the deep bays enclosed by precipitous rocks. There, this clear and gelid water soon freezes, and every successive year supplies an additional investing crust, till, after the lapse perhaps of several centuries, the icy mass rises at last to the size and aspect of a mountain, commensurate with the elevation of the adjoining cliffs. The melting of the snow, which is afterwards deposited on such enormous blocks, likewise contributes to their growth; and, by filling up the accidental holes or crevices, it renders the whole structure compact and uniform. Meanwhile the principle of destruction has already begun its operations. The ceaseless agitation of the sea gradually wears and undermines the base of the icy mountain, till, at length, by the action of its own accumulated weight, when it has perhaps attained an altitude of a thousand, or even two thousand feet, it is torn from its frozen chains, and precipitated, with tremendous plunge, into the abyss below. This mighty launch now floats like a lofty island on the ocean; till, driven southwards by winds and currents, it insensibly wastes and dissolves away in the wide Atlantic.

Such, I conceive, to be the real origin of the icy mountains or *icebergs*, entirely similar in their formation to the *glaciers* which occur on the flanks of the Alps and the Pyrenees. They consist of a clear, compact, and solid ice, which has the fine green tint verging to blue, which ice or water, when very pure and of a sufficient depth, always assumes. From the cavities of these icebergs, the crews of the northern whalers are accustomed, by means of a *hose*, or flexible tube of canvass, to fill their casks easily with the finest and softest water. Of the same species of ice, the fragments which are picked up as they float on the surface of the ocean yield the adventurous navigator the most refreshing beverage.*

It was long disputed among the learned, whether the waters of the ocean are capable of being congealed; and many frivolous and absurd arguments, of course, were advanced to prove the impossibility of the fact. But the question is now completely resolved; and the freezing of sea-water is established both by observation and experiment. The product, however, is an imperfect sort of ice, easily distinguishable from the result of a regular crystallization: it is porous, incompact, and imperfectly diaphanous. It consists of spicular shoots, or thin flakes, which detain within their interstices the stronger brine; and its granular spongy texture has, in fact, the appearance of congealed syrup, or what the confectioners call *water-ice*. This saline ice can, therefore, never yield pure water; yet, if the strong brine imprisoned in it be first suffered to drain off slowly,

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* The water which flows from those Arctic glaciers, becomes frozen again on the approach of winter, and forms along the coast a thick stratum of blue solid ice, imbedded in the beach, and from six to ten feet under the surface.

the loose mass that remains will melt into a brackish liquid, which in some cases may be deemed potable.*

To congeal sea-water of the ordinary saltness, or containing nearly the thirtieth part of its weight of saline matter, it requires not an extreme cold; this process taking effect about the 27th degree on Fahrenheit's scale, or only five degrees below the freezing-point of fresh water. Within the Arctic circle, therefore, the surface of the ocean being never much warmer, is, in the decline of the summer, soon cooled down to the limit at which congelation commences. About the end of July, or the beginning of August, a sheet of ice, perhaps an inch thick, is formed in the space of a single night. The frost now maintains ascendency, and shoots its increasing energy in all directions, till it has covered the whole extent of those seas with a solid vault to the depth of several feet. But, on the return of spring, the penetrating rays of the sun gradually melt or soften that icy floor, and render its substance friable and easily disrupted. The first strong wind, creating a swell in the ocean, then breaks up the vast continent into large fields, which are afterwards shivered into fragments by their mutual collision. This generally happens early in the month of June; and a few weeks are commonly sufficient to disperse and dissolve the floating ice. The sea is at last open, for a short and dubious interval, to the pursuits of the adventurous mariner.

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* Captain Parry remarked, that the superficial water near melting ice had scarcely any trace of saltness. In other observations made about the end of July, he discovered the water at the surface to contain only the 550th part of its weight of salt; but under ten fathoms the proportion had increased to the 39th, and at the depth of 300 fathoms to the 37th part. The friable ice of sea-water was found to hold the 115th part of salt.

While icebergs are thus the slow growth of ages, the fields or shoals of saline ice are annually formed and destroyed. The ice generated from melted snow is hard, pellucid, and often swells to enormous height and dimensions. But the concretion of salt water wants solidity, clearness, and strength, and never rises to any very considerable thickness. It seldom floats during more than part of the year; though, in some cold seasons, the scattered fragments may be surprised by the early frost, and preserved till the following summer.

The whale-fishers enumerate several varieties of the salt-water ice. A very wide expanse of it they call a *field*, and one of smaller dimensions a *floe*. When a field is dissevered by a subaqueous or *grown* swell, it breaks into numerous pieces, seldom exceeding forty or fifty yards in diameter, which, taken collectively, are termed a *pack*. This pack again, when of a broad shape, is called a *patch*; and, when much elongated, a *stream*. The packs of ice are crowded and heaped together by violent winds; but they again separate and spread asunder in calm weather. If a ship can sail freely through the floating pieces of ice, it is called *drift-ice;* and the ice itself is said to be *loose* or *open*. When, from the effect of abrasion, the larger blocks of ice are crumbled into minute fragments, this collection is called *brash-ice*. A portion of ice rising above the common level is termed a *hummock*, being produced by the squeezing of one piece over another. These hummocks or protuberances break the uniform surface of the ice, and give it a most diversified and fantastic appearance. They are numerous in the heavy packs, and along the edges of ice-fields, reaching to the height of thirty feet. The term *sludge* is applied by the sailors to the soft and incoherent crystals which the frost forms when it first attacks the ruffled surface of the ocean. As these increase, they have some effect, like oil, to still the secondary waves; but they are prevented from coalescing into a continuous sheet, by the agitation which still prevails; and they form small discs, rounded by continual attrition, and scarcely three inches in diameter, called *pancakes*. Sometimes these again unite into circular pieces, perhaps a foot thick, and many yards in circumference.

The fields and other collections of floating ice are often discovered at a great distance, by that singular appearance on the verge of the horizon, which the Dutch seamen have termed *ice-blink*. It is a stratum of lucid whiteness, occasioned evidently by the glare of light reflected obliquely from the surface of the ice against the opposite atmosphere. This shining streak, which looks always brightest in clear weather, indicates, to the experienced navigator, 20 or 30 miles beyond the limit of direct vision, not only the extent and figure, but even the quality of the ice. The *blink* from packs of ice appears of a pure white, while that which is occasioned by snow-fields has some tinge of yellow.

The mountains of hard and perfect ice are the gradual production, perhaps, of many centuries. Along the western coast of Greenland, prolonged into Davis's Strait, they form an immense rampart, which presents to the mariner a sublime spectacle resembling, at a distance, whole groups of churches, mantling castles, or fleets under full sail. Every year, but especially in hot seasons, they are partially detached from their seats, and whelmed into the deep sea. In Davis's Strait those icebergs appear the most frequent; and about Disco Bay, where the soundings exceed 300 fathoms, masses of such enormous dimensions are met with, that the Dutch seamen compare them to cities, and often bestow on them the familiar names of Amsterdam or Haerlem. They are carried towards the Atlantic by the current which generally flows from the north-east, and after they reach the warmer water of the lower latitudes they rapidly dissolve, and finally disappear, probably in the space of a few months.

The blocks of fresh-water ice appear black as they float; but show a fine emerald or beryl hue when brought up on the deck. Though perfectly transparent like crystal, they sometimes enclose threads or streamlets of air-bubbles, extricated in the act of congelation. This pure ice, being only a fifteenth part lighter than fresh water, must consequently project about one-tenth as it swims on the sea. An iceberg of 2000 feet in height would therefore, after it floated, still rise 200 feet above the surface of the water. Such, perhaps, may be considered as nearly the extreme dimensions. Those mountains of ice may even acquire more elevation at a distance from land, both from the snow which falls on them, and from the copious vapours which precipitate and congeal on their surface. But in general they are carried forwards by the current which sets from the north-east into the Atlantic, where, bathed in a warmer fluid, they rapidly waste and dissolve.

It may be shown by experiment, that if the water in which they float had only the temperature of 42°, the mass of ice would lose the thickness of an inch every hour, or two feet in a day. Supposing the surface of the sea to be at 52°, the daily diminution of thickness would be doubled, and would therefore amount to four feet. An iceberg having 600 feet of total elevation would hence, on this probable estimate, require 150 days for its dissolution. But the melting of the ice would be greatly accelerated if the mass were impelled through the water by the action of winds. A velocity of only a mile in an hour would triple the ordinary effect. Hence, though large bodies of ice are often found near the banks of Newfoundland, they seldom advance farther, or pass beyond the 48th degree of latitude. Within the Arctic regions those stupendous blocks remain, by their mere inertia, so fixed on the water, as commonly to serve for the mooring of vessels employed in the whale-fishery. In such cases, however, it is a necessary precaution to lengthen the cables, and ride at some distance from the frozen cliff; because the fragments of ice, which the seamen term *calves*, are frequently detached from the under part of the mass, and, darting upwards, acquire such a velocity in their ascent, that they would infallibly strike holes into the ship's bottom.

The ice produced from salt water is whitish, porous, and almost opaque. It is so dense, from the quantity of strong brine enclosed in its substance, that, when floating in the sea, it projects only one-fiftieth part above the surface. The porous saline ice has a variable thickness, yet seldom exceeding six feet. But this saline ice which, during the greater part of the year, covers the Arctic seas, is annually formed and destroyed; a small portion of it only, and at certain seasons, escaping the general wreck. The thaw commonly lasts about three months; and during that time the heat of the solar rays, which, though oblique, yet act with unceasing energy, whether applied directly or through the intervention of the air or the water, is sufficient for the dissolution of all the ice produced in the course of the autumn, the winter, and the spring. *It may be proved by experiment that, under the Pole itself, the power of the* sun at the solstice could, in the space of a week, melt a stratum of five inches of ice. We may hence fairly compute the annual effect to be sufficient for thawing to the depth of forty inches. It should likewise be observed, that, owing to the prevailing haziness of the atmosphere in the northern latitudes, those singular cold emanations which always dart from an azure sky, and in the more temperate climates diminish the calorific action of the sun often by one-fifth part, can scarcely exist. On this account, perhaps the estimate of the annual destruction of Polar ice may be swelled to a thickness of four feet.

As heat is absorbed in the process of thawing, so it is again evolved in the act of congelation. The annual formation and destruction of ice within the Arctic circle, is hence a beautiful provision of Nature for mitigating the excessive inequality of temperature. Had only dry land been there opposed to the sun, it would have been absolutely scorched by his incessant beams in summer, and pinched in the darkness of winter by the most intense and penetrating cold. None of the animal or vegetable tribes could have at all supported such extremes. But, in the actual arrangement, the surplus heat of summer is spent in melting away the ice; and its deficiency in winter is partly supplied by the influence of the progress of congelation. As long as ice remains to thaw, or water to freeze, the temperature of the atmosphere can never vary beyond certain limits Such is the harmony of the system; and all experience and observation forbid us to believe it to be subject to any radical change. Some years may *chance to form more ice than others, or to melt more away; but it were idle to expect* any thing like a general or permanent disruption of the glacial crust which binds the regions of the north. Even were this ice once removed, a similar collection would soon succeed, since it is always the effect, and not the cause, of the disposition of the atmosphere, which it really serves to temper. We should be guilty of the most vicious reasoning in a circle, if we maintained that ice first cooled the air, and that this cold air next increased the fields of ice.

But, whatever may be the vicissitudes of the Polar ice, they cannot, in any sensible manner, affect the climates of the lower latitudes. The whole circumjacent space where frost holds his reign, bears a very small proportion to the surface of the northern hemisphere. Reckoning from the parallel of sixty degrees, it would not exceed the eighth part; but, since the gelid region hardly extends below the latitude of seventy-five degrees, it may be stated at the thirty-second part of the hemisphere. On the supposition, therefore, that the Arctic cold were all transferred and infused into the atmosphere of the south, it could yet produce no visible alteration of climate.

Even if we imagined with Mr Scoresby, that, during the years 1816 and 1817, two thousand square leagues of ice have disappeared in the Greenland seas between the parallels of seventy-four and eighty degrees, this extent would still scarcely exceed half the surface of Ireland. It may be calculated, that the loss of heat on our globe, occasioned by a total eclipse of the sun, reckoning this only equivalent to a complete obscuration for the space of a single hour, is as much as would be absorbed by the thawing of a circle of ice 500 miles in diameter, and 150 feet thick. This quantity surpasses at least sixty times the ice-fields dispersed from Greenland, allowing them the mean thickness of thirty feet; and yet the temperature of the air is never depressed more than a degree or two during the continuance of any solar eclipse.

But the idea is quite chimerical, that any winds could ever transport the Polar influence to our shores. It may be proved, from the results of accurate experiment, that a current of air flowing over a warmer surface, whether of land or water, becomes, in the space of an hour, penetrated with the same temperature through a stratum of eighty feet; though the limit of actual contact, or of mutual attrition, is confined to a surface not exceeding the 500th part of an inch in thickness. If we assign to it the height of a mile, which is a most ample allowance, it would lose all its sharpness, and acquire the standard heat in the course of sixty-six hours. Admitting this wind to travel at the rate even of twenty miles each hour, it would consequently spend all its frigorific action in a tract of 1320 miles. The gales from the remotest north must thus discharge their store of cold into the German Sea or the Atlantic Ocean. Nor could such impressions, though continued through a course of ages, have the smallest power to chill the superficial water; for the moment any portion of this was cooled, it would, from its increased density, sink down into the vast abyss. The surface would not be affected till after the cooling had, in its progress, pervaded the whole mass from the bottom upwards. According to the calculations of Laplace, founded on a comparison of the theory of tides with actual observation, the mean depth of the ocean exceeds ten English miles. Supposing, therefore, a wind blowing from some northerly point, and ten degrees colder than the water, were to sweep over the Atlantic six months every year, at the rate of fifteen miles an hour, it would take 220 years to cool that vast body of water only a single degree.

Some persons have imagined that the mountains or islands of ice, which are occasionally drifted into the Atlantic Ocean, must be sufficient, by their frigorific influence, to modify the character of our climate. One of the first who advanced that opinion was the ingenious Richard Bradley, fellow of the Royal Society, and professor of botany in the university of Cambridge. In "A Survey of the Ancient Husbandry and Gardening, collected from the Greek and Roman Writers," printed in octavo at London in 1725, he introduces the following remarkable passage:—

"I the rather mention the case of winds becoming cold by mixing with the effluvia of snow or ice, because I have made some remarks upon the tempestuous weather, which often happens about the end of May, or in June, which has in all my observations been brought in by westerly winds; and again, I as surely find, that at such times large islands of ice and snow are passing to the southward in the Western Ocean, as I have been informed by several captains of ships that were then coming from our plantations to England. Some of these islands are so large as to measure sixty miles in length, and yielding so great a vapour, that for a day's voyage on one side of them, the weather has been so hazy that the mariners could not discover what they were; and this was accompanied with so much cold, that they imagined they had mistaken in their accounts, and got several degrees too far towards the north; but a day or two explained the matter, and gave them an opportunity of surveying what they had been so much surprised at. Now, considering the extraordinary heat of the sun, at the season these appear, the vapour must be very considerable that rises from them, and it is no wonder then, that, as it expands itself, it presses the air with violence enough to cause tempests and carry cold along with it."

But a little reflection will convince us that such remote influence on our climate must be quite insignificant. At a very wide estimation, the surface of ice exposed to the winds could never exceed the thousandth part of the whole expanse of the Atlantic Ocean; consequently the general temperature of the air would not be altered the fortieth part of a degree. Nor could this minute impression be wafted to our shores, being invariably spent in the length of the voyage. The opinion which Mr Bradley entertained near a hundred years ago might have been tolerated in the infancy of physical science ; but that the same notion should be revived, and proclaimed with confidence at this day, may well excite surprise.

These reasonings, which suggested themselves on the occasion of the sailing of the first expedition sent by government to explore the Arctic seas, have been singularly confirmed by the results of the late daring voyages. Captain Parry, by the most vigilant exertions indeed, succeeded, during the brief interval of an open season, to advance from Baffin's Bay, by Lancaster Sound, above 400 miles westwards, through floating masses of ice, on the parallel of 75 degrees ; but this distance is probably not the third part of the whole space between the Atlantic and Pacific Oceans. All the subsequent attempts of that able navigator to penetrate any farther in the same direction have proved unsuccessful ; and his last arduous scheme of reaching the Pole, by dragging boats over an expanse of rough and broken ice, utterly failed. The utmost labour and incited exertions of the crews scarcely enabled him to proceed, in 1827, three degrees northwards from Spitzbergen, and attain the latitude of 82° 45′, not far beyond the usual resort of the Greenland whalers. Captain Weddell, without the stimulant of national reward, had, four years before, the resolution to penetrate to a very great height in the opposite hemisphere, which is always considered colder and less accessible than the northern, having advanced to the latitude of 74° 15′ in an open sea.

On the hypothesis that the quantities of ice which encumber the Arctic seas have been accumulating for a long succession of years, it is assumed as a fact, that throughout Europe a milder and more genial climate had formerly prevailed. A closer inspection of the details, however, will show this supposition to be destitute of any solid support. One hears continual complaints, indeed, of the altered condition of the seasons, especially from elderly persons, whose bodily frame has become more susceptible to the impressions of cold; but similar lamentations have been repeated by the poets and the vulgar from the earliest times. If we listened implicitly to such querulous declaimers, we should believe that Nature has spent all her fires, and is hastening fast into decay. Immense forests, it is said, anciently clothed the highest tracts of this island and other northern countries, where scarcely a tree can now be made to grow. The period of vintage was in former ages several weeks earlier in France than at present; vineyards were planted during the time of the Romans in various parts of the south of England, where at this day even hops are raised with difficulty; and the sides of many hills in Scotland bear evident traces of the plough, which have been long since abandoned irretrievably to the dusky heath.

But, in answer to such allegations, it may be observed, that a patch of wood will not thrive in cold situations, merely for want of the shelter which is afforded by extensive plantations. In Sweden and Norway, which are mostly covered with natural forests, it has become an object of police to prevent their indiscriminate destruction. The timber in those sylvan countries is cut at stated periods of its growth, and in detached portions; the vacant spaces being left as nurseries, embosomed amidst an expanse of tall trees. Some places in Sweden, where the forests have been accidentally destroyed by fire, present the image of sterility and of wide desolation.

It is probable that the vines grown in ancient times were coarser and hardier plants than those which are now cultivated. A similar observation extends to all the products of gardening. A succession of diligent culture softens the character of the vegetable tribes, and renders them more delicate, while it heightens the flavour of their fruit. The Roman soldiers stationed in Britain would naturally prefer wine, their accustomed beverage, however harsh and poor, to the *cervisia*, or unpalatable ale brewed by the rude arts of the natives.

The marks of tillage left on our northern hills prove only the wretched state of agriculture at a remote period. For want of a proper system of rotation, and the due application of manure, the starving tenantry were then tempted to tear up with the plough every virgin spot they could find, and, after extracting from it a pitiful crop or two of oats, to abandon it to a lasting sterility. The cattle in those days, having no sort of provender through the winter but dry straw, were quite feeble and exhausted in the spring. The soil, too, was very stiff, from want of repeated and seasonable tillage. Under such circumstances, it affords no proof of any great heat, that the slothful peasants, oppressed with a load of clothes, usually began their operations in the field before sunrise, while preparing the ground for the reception of the barley-seed.

It is very difficult to ascertain the precise condition of the weather in distant ages. The thermometer was not invented till 1590, by the celebrated Sanctorio; nor was that valuable instrument reduced to a correct standard before the year 1724, by the skill of Fahrenheit. We have hence no observations of temperature which go further back than a century. Prior to this period, we must glean our information from the loose and scanty notices which are scattered through the old chronicles relative to the state of the harvest, the quality of the vintage, or the endurance of frost and snow in the winter. Great allowance, however, should be made for the spirit of exaggeration and the love of the marvellous which infect all those rude historical monuments.

On glancing over the incidental notices of the state of the weather, it is obvious that no material change has taken place for the last thousand years in the climate of Europe; but we may conjecture that it has gradually acquired rather a milder character; at least its excessive severity appears on the whole to be of rarer occurrence. The weather seems not to affect any precise course of succession, although two or more years of remarkable heat or cold often follow consecutively; yet there can be no doubt, that series of atmospheric changes, however complicated and perplexing, are as determinate in their nature as the revolutions of the celestial bodies. When the science of meteorology is more advanced, we shall, perhaps, by discovering a glimpse of those vast cycles, which result from the varied aspects of the sun combined with the feebler influence of the moon, be at length enabled to predict, with some degree of probability, the condition of future seasons. The intermediate period of nine years, or the semi-revolution nearly of the lunar nodes and apogee, proposed by Toaldo, seems not to be altogether destitute of foundation. Thus, of the years remarkably cold, 1622 was succeeded, after the interval of four periods or 36 years, by 1658, whose severity lasted through the following year. The same interval brings us to 1695, and five periods more extends to 1740, —a very famous cold year; three periods now come down to 1767, nine years more to 1776, and eighteen years more to 1794, the cold continuing through 1795. Of the hot years it may be observed, that four periods of nine years extend from 1616 to 1652, and three such again to 1679. From 1701 to 1718 there was an interval of 17 years, or very nearly two periods, while three periods reach to 1745, another period to 1754, and one more falls on 1763; and from 1779 to 1788 there are just nine years. The year 1818 would therefore correspond to 1701, 1719, and 1746, and consequently very nearly to 1718. Again, the years 1784, 1793, 1802, and 1811, at the intervals of successive periods, were all of them remarkably warm. A cycle of 54 years, including therefore six of these subordinate periods, has lately been proposed with much confidence, but apparently on slender grounds.

If the climate had undergone any real change in the more temperate parts of Europe, a corresponding alteration, with very distinct features, must inevitably have taken place in the Arctic regions. But a dispassionate inquiry discovers no circumstances which at all clearly point at such a conclusion. On this head we may readily satisfy ourselves, by a short retrospect of the principal facts which have been recorded by voyagers.

Greenland, in its position and general outline, appears to resemble the vast promontory of South America. From Cape Farewell, a small island, divided from the shore by a narrow inlet called Staaten Hoek, in the latitude of 60°, it stretches, in a north-westerly direction, about 200 miles, to Cape Desolation, and then nearly northwards to Good Haven, in latitude 65°, where it inclines, nearly a point towards the east, as far as the island of Disco, which occupies a spacious bay, between the latitudes of 67° and 71°, in Davis's Strait. Thence the continent extends almost due north, beyond the latitude of 76°, till it is lost in the recesses of Baffin's Bay. On the other side, Greenland stretches about north-north-east 300 miles, but with a great sinuosity, till nearly opposite to Iceland, in the latitude of 64°, and now advances almost north-east to the latitude of 75°, when, suddenly bending to the north, it holds this direction beyond Spitzbergen and the latitude of 80°. The coast is everywhere bold and rocky, like that of Norway; and the interior of the country consists of clustering lofty mountains, covered with eternal snows. But the western side, which forms Davis's Strait, is indented with numerous bights, creeks, and *fiords* or firths, which, for the space of two or three months each year, look verdant, and yield tolerable pasturage. The eastern shore, again, which properly bounds the Greenland seas, can rarely be approached by the whalers, as the accumulated stream of ice, which in summer is constantly drifting from the north-east, creates a formidable barrier. The position of this icy boundary, though nearly parallel to the land, is not absolutely fixed, but varies within certain limits in different years. The late survey by Mr Scoresby was therefore not very satisfactory.

In Davis's Strait, the whalers generally resort to Disco Bay, or push farther north ; sometimes as far as the latitude of 76°, to the variable margin of the great icy continent. On the other side of Greenland, about the meridian of eight degrees east from Greenwich, the ice, in warm seasons, retires to the latitude of 80°, beyond Hakluyt's Headland, at the extremity of Spitzbergen ; while, at other times, it advances as far south on the same line as the latitude of 70°, enveloping the whole of that island, but forming below it a wide bay, called the *Whale-fisher's Bight*, on the parallel of Bear Island. The former are called *open* and the latter *close* seasons. In open seasons, the ships employed in these fisheries find a channel from 20 to 50 leagues wide, through which they shoot forward along the shores of Spitzbergen, till they reach the latitude of 78° or 79°, where the whales are most abundant. The chase of these animals, in the Greenland seas at least, seldom lasts above two months, commencing generally at the end of April and terminating with June, when they usually disappear, and the prevalence of dense fogs renders the navigation very dangerous. In Davis's Strait, the fishery continues often for two, or even three months longer. Mr Scoresby thinks it were better if our Greenland ships, like the Dutch and other foreigners, began their voyage somewhat later than has become the practice. In close seasons, the hardy navigator is obliged, with imminent peril and hazard, to impel his ship, by *boring* under a press of sail, and assisted by ropes and saws, through the drift-ice which borders the great barrier, endeavouring to follow *every vein of water* that runs nearly in the required direction. If he fail in this attempt, he must forego the chance of a profitable voyage, and content himself with the humbler pursuit of catching seals.

The space over which the line of ice may be supposed to oscillate in the Greenland seas, extends 1400 miles from Cape Farewell to 200 miles beyond Jan Mayen's Island, which it includes, and has a mean breadth of about 80 miles. Such is the extent of the mere surplus ice formed and dissolved from year to year,—exceeding the whole surface of Great Britain. Hence the quantity melted or liberated during the years 1816 and 1817 bore no very considerable proportion to the ordinary fluctuating mass. It is therefore evident, that whatever may be the casual variations of the frozen expanse, no mighty alteration has yet taken place in the climate and condition of the Arctic seas.

If we compare the journals of former navigators, we shall be convinced that all the changes of the Polar ice are periodical, and are again repeated at no very distant intervals of time. We may pass over the pretensions of some Dutch captains, who alleged that they had been carried by winds or currents as far north as the latitude of 88°, or even that of 89° 40′, and consequently only twenty miles from the Pole; since their estimate, at all times rude, from observations with the fore-staff, was then founded on mere dead reckoning after a continuation of foggy weather. Davis, in 1587, ascended, in the strait which deservedly bears his name, to the latitude of 72° 12′, where he found the variation of the compass to be 82° west, or nearly the same as at present. In 1616, Baffin advanced, in the same quarter, as high as the latitude of 78 degrees. Hudson had, nine years before, penetrated in the Greenland seas to the latitude of 81°, and seen supposed land as high as that of 82° lying to the north-east of Spitzbergen. But it is mortifying to remark how little progress has been made in geographical discovery since those early and intrepid adventurers explored the Arctic regions with their humble barks, which seldom exceeded the size of fifty tons. We must pass over a very long interval to obtain authentic information. In 1751, Captain M'Callam, whom Mr Barrington calls a scientific seaman, sailed without obstruction from Hakluyt's Headland as high as the latitude of 83½°, where he found an open sea; and the weather being fine, nothing hindered him from proceeding farther, but his responsibility to its owners for the safety of the ship. Captain Wilson, about the end of June 1754, having traversed floating ice from the latitude of 74° to 81°, at last found the sea quite clear as far as he could descry; and he advanced to the latitude of 83°, till, not meeting with any whales, and beginning to apprehend some danger, he shaped back his course. At this very time, Captain Guy, after four days of foggy weather, was likewise carried to the same point. The Polar seas at this period must indeed have been remarkably open; for one of the most extraordinary and best-authenticated voyages was performed in 1754 by Mr Stephens, a very skilful and accurate observer, whose testimony is put beyond all manner of doubt by the cool judgment of the late astronomer-royal, Dr Maskelyne. This navigator informed him, that about the end of May he was driven off Spitzbergen by a southerly wind, which blew for several days, till he had reached the latitude of 84½°; and that in the whole of this run he met with little ice and no drift-wood, and did not find the cold to be anywise excessive. In different subsequent years, the Greenland whalers have advanced to the latitude of 81 or 82 degrees. This was accomplished even in 1766; although, according to Kerguelin, the whole space between Iceland and the opposite coast was then frozen over. The year 1773, or that in which Captain Phipps performed his voyage, was still more favourable for approaching towards the North Pole. In 1806, the elder Mr Scoresby ascended to the latitude of 81° 50′; but in the following year he could not proceed farther than the parallel of 78½°. In 1811, the higher latitudes were again accessible; and, after a short interval, the summers of 1815, 1816, and 1817, are represented as open seasons; though none of the whalers have now penetrated so far into the north as had been done in many former years, and particularly in 1754.

In this plain statement, one can perceive no decided symptoms of any general or progressive tendency towards a dissolution of the Polar ice. The frozen border alters its position from one year to another, and probably returns again to the same limits after certain short periods of time. Such fluctuations are analogous to the incessant changes which affect the state of the weather in the more temperate regions. The complex system of winds moulds the climate, and varies the features of the seasons over the globe. It is a common remark of those who frequent the Polar seas, that they find always the least obstruction from ice when the preceding winter has been very severe in the more southern latitudes. In the year 1766, though the frost had proved most intense through the rest of Europe, the whalers reached a high latitude ; and, not to multiply instances, the three seasons preceding 1818, reckoned very open, succeeded to winters notoriously cold and protracted. Nor is it difficult to discern the reason of this seeming paradox ; for our severe winters are occasioned by the prevalence of northerly winds, which must arrive at the Polar seas from the south, and consequently transport so much warmth to them as may check the usual rigour of the frost.

The main argument, however, brought to prove the deterioration of the Arctic climate, is drawn from the supposed existence of a colony, which had once flourished on the eastern coast of Greenland, but has, for several centuries, become extinct; all access to its remains being at length completely barred by the accumulation of ice. This tale, which seems to have owed its birth to Torfæus, the historian of Norway, has obtained very general credence. Yet, a sober examination of the early *Sagas*, or northern chronicles, so full of wonder and fable, will show that there is no solid reason for entertaining such a notion, or believing that the first settlement of Greenland was made on the east side of the continent. The whole contexture of the original narrative indicates the very opposite conclusion.

After the North had ceased to send forth her numerous swarms upon the fertile provinces of the Roman empire, the Scandinavian nations, prompted by their peculiar situation, betook themselves to a life of maritime adventure. Those bold and hardy pirates visited every sea, and pillaged, during a course of nearly three hundred years, all the coasts of Europe, from the extremity of Scotland to the shores of Sicily. During the first half of the ninth century, they conquered the Orkneys, the Shetland and Western Isles —obtained possession of Ireland—plundered England and France—and extended their ravages to Italy. In 876, the Northmen, or Normands, extorted from the weakness of the French king the cession of the fine province of Neustria, where they quietly settled; while another party of these fierce invaders had occupied the fertile coast of Esthonia, on the south side of the Baltic.

But the visits of those intrepid navigators were not confined to the richer countries of the south. They carried ravens with them, for the purpose of discovering distant land, by the direction of the flight of those powerful and sagacious birds. In 861, Nadodd, a roving pirate, in one of his voyages in the northern seas, happened to be cast away on an island which he called *Snowland*. Three years afterwards, Gardar and Flocke, two Swedes, visited it; and having found a great quantity of drift-ice collected on the north side of it, they gave it the name of *Iceland*, which it still bears. But in 874, Ingolf and Leif, two famous Norwegian adventurers, carried a colony to this inhospitable region, the latter having enriched it with the booty which he had ravaged from England. Other emigrants, whom the disorders of the times drove successively from home, resorted in crowds to the new settlement, which became very considerable in the space of a few years.

Iceland itself was able, after the progress of about a century, to send out likewise her colonies. Thorwald, a proud and opulent Norwegian chief, who had been lately banished thither from the court for some murder committed by him, soon died in exile, leaving his wealth and his restless spirit to his son Eric *Raude*, or the *Red*. This youth, actuated by the same vengeful passions, killed one of his neighbours in a fight, and was obliged to withdraw himself from Iceland for the space of three years. In 982, Eric sailed in quest of adventure and discovery. Instructed by the reports of former navigators, he directed his course towards the south-west; and, after a quick run, he descried two lofty mountains, the one covered with snow and the other cased with ice, which he called *Huitserken* and *Blaaserken*, or *the White Shirt* and *the Blue Shirt*, and soon reached a headland which he doubled; and having entered a spacious creek, he spent the winter on a pleasant adjacent island. In the following season, pursuing his discoveries, he explored the continent, and was delighted with the freshness and verdure of its coast. Contrasting this new country with the dark rocks of Iceland, he bestowed on it the flattering appellation of *Greenland;* and, on his return, invited settlers to join him, by circulating the most glowing and exaggerated descriptions. With twenty-five vessels he sailed back again; but of these only fourteen reached their destination. This colony was soon augmented, by the arrival of other adventurers, not only from Iceland, but from the Orkneys and other islands planted by the Norwegians. In the year 999, Leif, a son of Eric Raude, having visited the court of Norway, was induced, by the zealous and earnest solicitation of King Olaf Tryggeson, to embrace the Christian faith; and, carrying with him some monks, he found, through their ministry, no great difficulty in persuading his father and the rest of the settlers to forsake the rites of paganism.

The first colony having extended itself along the coast to a wide firth, another settlement beyond that boundary was established farther towards the west. The former, called *Oestre Bygd*, or the *Eastern Settlement*, is said to have included, in its most flourishing state, twelve parishes and two convents; and the latter, termed *Vestre Bygd*, or the *Western Settlement*, contained four parishes. The colonists of Greenland were compelled to lead a life of hardship and severe privations. They dwelt in hovels surrounded by mountains of perpetual ice; they never tasted bread, but subsisted on the fish which they caught, joined to a little milk obtained from their starving cows; and, with seal-skins and the tusks of the walrus, they purchased, from the traders who occasionally visited them, the wood required for fuel and the construction of their huts.

Combining the several circumstances together, it seems clear that the original colony of Greenland began about the southern promontory, near Cape Farewell, and stretched along the coast in a northwesterly direction. Farther north, and probably as high as the latitude of 60°, the second settlement was formed. For some centuries both of them maintained a sort of commercial intercourse with Norway; but this trade became afterwards very much reduced, in consequence of its being seized as an exclusive privilege of the Danish court. About the year 1376, the natives of the country, or Esquimaux invaders, whom the Norwegian settlers had in contempt called *Skrællings* or *Dwarfs,* attacked the western colony, which now claimed the assistance of its elder brother. The scanty population, however, was enfeebled by such repeated alarms; and that dreadful pestilence, termed the *Black Death,* which raged over Europe from the year 1402 to 1404, at last extended its ravages to Greenland, and nearly completed the destruction. In fertile regions the waste of the human species is always quickly repaired; but poor and barren countries can seldom recover from the depression of such severe calamities. The colonies which occupied Greenland appear to have languished near one hundred years afterwards, till they became finally extinct about the commencement of the sixteenth century.

But a notion has very generally prevailed, that only the western settlement of Greenland had perished, while the eastern was merely secluded from communication with the rest of the world by a vast barrier of ice, at length accumulated on its shores. The only question lately entertained was, whether these ill-fated colonists have survived the catastrophe, or have been suddenly entombed in ice and snow, as the unhappy citizens of Herculaneum were anciently involved in a dense shower of volcanic ashes. Tremendous stories are told of the east side of Greenland being now tenanted by giants and stalking ghosts. For more than a century past the court of Denmark has, at different times, despatched ships to search after its lost colony, which, evidently under the impression of superstitious awe, found it impossible to penetrate on that enchanted coast farther than Cape Discord, in the latitude of 61°. But in favourable seasons small boats can, without much difficulty, creep along the shore to a much higher parallel. If any settlers had ever occupied the narrow bays, they might surely have escaped either in their canoes or in sledges.

The supposed existence of a colony on the east side of Greenland is clearly a fable, originating in a misapprehension of the import of the designations applied severally to the two settlements. The one first made lay no doubt to the east, as well as to the south of the other; but the ships which resorted from Norway held a westerly course for them both. Between them a mutual intercourse appears likewise to have been maintained, which surely could not have taken place had they been divided by a chain of lofty and impassable mountains covered with eternal snow. Traces of those ancient settlements are besides observed even at present scattered along the western shores of Greenland, as low down as the latitude of 61°, though not corresponding altogether with the poetical descriptions of the Icelandic Sagas. Except the very slight remains of a church, the only vestiges now remaining consist of low naked walls, which had served as pens for sheltering the cattle.

It may be safely affirmed that the settlements which, during the last hundred years, the Danes have been forming at various points on the west side of Greenland, are more numerous and thriving than those which existed at any former period. They consist of twenty-one colonies, stretching over an extent of 800 miles. The first establishment is only a single family, occupying Bear Island, a little to the east of Cape Farewell. Ten other hamlets, composed chiefly of Moravians, are planted at different points, from the latitude of 60° to that of 68°. Three settlements are distributed round Disco Bay, about the latitude of 69°; and seven more have been extended thence as far as the latitude of 73°. So far, therefore, from the population having been extirpated by the increased severity of the climate, the truth appears to be, that the present establishments on the coast of Greenland extend ten degrees farther north than the ancient settlements at their most flourishing period. This advance of the colonies has been owing, no doubt, to the increased activity of the whale fisheries, and to the circumstance of these having been lately carried with success into Davis's Strait. But there is nothing certainly in their history which betrays any radical or permanent change in the climate of the Arctic regions. The same continent of ice still remains during the far greater part of the year, to bar the access of the navigator to the Pole.

CHAPTER II.

Animal and Vegetable Life in the Polar Regions.

When we contemplate the aspect of the northern world,—bleak, naked, dreary, beaten by the raging tempest, and subject to an extremity of cold which, with us, is fatal to life and to all by which life is supported,—we naturally imagine that animal nature must exist there on a small scale, and under diminutive forms. It might be expected, that only a few dwarf and stunted species would be scattered along its melancholy shores, and that life, as it attempted to penetrate these realms of desolation, would grow faint and expire. But the mighty Architect of nature, whose ways and power far surpass human comprehension, makes here a full display of his inexhaustible resources. He has filled these naked rocks and wintry seas with a swarming profusion of life, such as he scarcely brings forth under the most genial glow of tropical suns. He has stored them with the mightiest of living beings, compared to whose enormous bulk, the elephant and hippopotamus, which rear their immense shapes amid the marshy plains of the tropics, seem almost diminutive. Even the smaller species, as that of the herring, issue forth from the frozen depths of the Arctic zone in shoals which astonish by their immensity. Moving in close and countless columns, they fill all the southern seas, and minister food to nations. The air too is darkened by innumerable flocks of sea-fowl, while, even upon the frozen surface of the land, animals of peculiar structure find food suited to their wants.

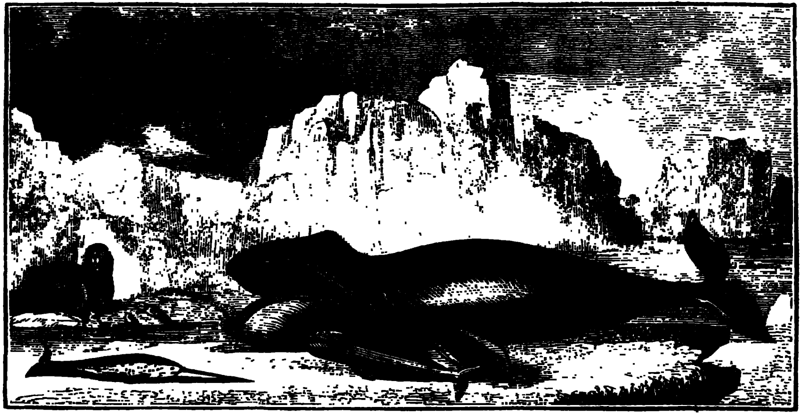
By what means, or by what resources, does Nature support, amid the frozen world, this immensity of life? Wonderful as are her operations, they are always arranged agreeably to the general laws imposed upon the universe; and we shall find, in the structure and condition of the animal world, the powers by which it is enabled to defy this frightful rigour of the elements. Some of the provisions by which animal frames are adapted to the varying extremes of the climate have almost the appearance of direct interposition; yet a more profound investigation always discovers the causes of them to be deeply lodged in their physical organization.

It is on the seas and shores of the Arctic zone that we chiefly observe this boundless profusion of life; and in conformity with that arrangement by which Nature supports the inhabitants of the seas, by making them the food of each other, so here also we observe a continued gradation of animals, rising one above another, the higher preying upon the lower, till food is at last found for those of largest bulk and most devouring appetite.

The basis of subsistence for the numerous tribes of the Arctic world is found in the genus *medusa,* which the sailors graphically describe as sea-blubber. The medusa is a soft, elastic, gelatinous substance, specimens of which may be seen lying on our own shores, exhibiting no signs of life except that of shrinking when touched. Beyond the Arctic circle it increases in an extraordinary degree, and is eagerly devoured by the finny tribes of all shapes and sizes. By far the most numerous, however, of the medusan races are of dimensions too small to be discerned without the aid of the microscope,—the application of which instrument shows them to be the cause of a peculiar colour, which tinges a great extent of the Greenland Sea. This colour is olive-green, and the water is dark and opaque compared to that which bears the common cerulean hue. These olive waters occupy about a fourth of the Greenland Sea, or above twenty thousand square miles; and hence the number of medusan animalcules which they contain is far beyond calculation. Mr Scoresby estimates that two square miles contain 23,888,000,000,000,000; and as this number is beyond the range of human words and conceptions, he illustrates it by observing, that 80,000 persons would have been employed since the creation in counting it. This green sea may be considered as the Polar pasture-ground, where whales are always seen in the greatest numbers. These prodigious animals cannot derive any direct subsistence from such small invisible particles; but these form the food of other minute creatures, which then support others, till at length animals are produced of such size as to afford a morsel for their mighty devourers. The genus *cancer*, larger in size than the medusa, appears to rank second in number and importance. It presents itself under the various species of the crab, and, above all, of the shrimp, whose multitudes rival those of the medusa, and which in all quarters feed and are fed upon. So carnivorous are the propensities of the northern shrimps, that joints hung out by Captain Parry's crew from the sides of the ship were in a few nights picked to the very bone; and nothing could be placed within their reach except bodies of which it was desired to obtain the skeleton. Many of the zoophytical and molluscous orders, particularly *actinia, sepia,* and several species of marine worms, are also employed in devouring and in affording food to various other animals.

Among the numberless tribes of living things which people the northern seas, one class stands highly conspicuous. These are the *cetacea,* comprehending the largest of existing animals, and having a structure wholly distinct from every other species. Although their home be entirely in the depth of the waters, they have several features in common with the larger quadrupeds. They belong to the Linnæan class of *mammalia,* or suck-giving animals; they produce their young alive; their skin is smooth and without scales; their blood warm; and the flesh tastes somewhat like coarse beef. They have a heart with two ventricles, and lungs through which they respire; and being unable to separate the air from the water, as fishes do by means of their gills, they must come to the surface in order to breathe. It is thus by no means strictly scientific to call the whale a fish; yet he is entirely an inhabitant of the sea, having a tail, though placed in a different position from that of ordinary fishes, while his front limbs much more resemble fins than legs, and are solely useful for pawing the deep. Hence the vulgar, following a natural and descriptive classification, obstinately continue to give the name of fish to these watery monsters. But the most characteristic and important feature of the *cetacea* consists in a thick deep layer of fatty substance, called blubber, lodged beneath the skin and surrounding the body, which yields, on expression, nearly its own bulk of thick, coarse, viscid oil. It is by this covering that Providence enables them to defy the most dreadful extremities of cold, and to preserve a strong animal heat even under the eternal ice of the Pole. Yet this substance, being subservient to the uses of man, has roused a dreadful and deadly enemy, who employs against them the resources of *art*,—a power which the mightiest brutal force seeks in vain to oppose. He pursues them through ice and tempest, and dyes all the northern seas with their blood. They themselves are meek, peaceful, sluggish; and man, in the dreadful contests which he wages with them, is almost always the aggressor; yet the resistance which he then encounters is sometimes terrible, and his life is not unfrequently the forfeit.

Among the cetaceous tribes the chief place is due to the *whale*, of all animals " mightiest that swim the ocean stream." Enormous as his bulk is, rumour and the love of the marvellous have represented it as being at one time much greater, and the existing race as only the degenerate remnant of mightier ancestors. Mr Scoresby, however, by collecting various good authorities, has proved that sixty feet was always nearly the utmost length of the *mysticetus*, or great Greenland whale. Of 322 individuals, in the capture of which that gentleman was concerned, none occurred of a length exceeding 58 feet; and he gives no credence to any rumour of a specimen which exceeded 70 feet. Even 60 feet implies a weight of 70 tons, being nearly that of three hundred fat oxen. Of this vast mass, the oil in a rich



whale composes about thirty tons, and when, as was the case some years ago, that article brought £55 or £60 per ton, we may form some idea of the great value of the capture; the bones of the head, fins, and tail, weigh 8 or 10; the carcass, 30 or 32 tons. The oleaginous substance or blubber, the most valuable part of the animal, forms a complete wrapper round the whole body, of the thickness of from 8 to 20 inches. The head is disproportionally large, forming about a third of the entire bulk. The basis consists of the crown-bone, from each side of which descend those immense jaw-bones which are sometimes presented to our wondering eyes, and which the whalers place on deck as trophies of their success, and in order that the fine oil contained in them may ooze from their lower extremities. These jaw-bones are from 16 to 20 feet in length, and extend along the mouth in a curved line, till they meet and form a species of crescent. The lips, nearly 20 feet long, display, when open, a cavity capable of receiving a ship's jolly-boat with her crew. The whale has no external ear; but, when the skin is removed, a small aperture is discerned for the admission of sound. This sense accordingly is very imperfect; yet the animal, by a quick perception of all movements made on the water, discovers danger at a great distance. The eyes are proportionally small, though the sense of seeing is acute; more so, however, through clear water than through an aerial medium. But the most unique feature in the structure of this animal consists in the *spiracles* or blow-holes placed nearly on the crown of the head. These have been compared to natural *jets d'eau* throwing up water to the height of 40 or 50 feet; but the more careful scrutiny of Mr Scoresby ascertained, that they emit only a moist vapour, and are neither more nor less than huge nostrils. When, however, this vehement breathing or blowing is performed under the surface, a considerable quantity of water is thrown up into the air. The sound thus occasioned is the only thing like a voice emitted by the animal, and, in the case of a violent respiration, it resembles the discharge of a cannon.

The tail is the most active limb of this mighty animal, and the chief instrument of his motion. It does not rise vertically like that of most fishes, being flat and horizontal, only four or five feet long, but more than twenty feet broad. It consists of two beds of muscles connected with an extensive layer surrounding the body, and enclosed by a thin covering of blubber. Its power is tremendous. A single stroke throws a large boat with all its crew into the air. Sometimes the whale places himself in a perpendicular position with the head downwards, and, rearing his tail on high, beats the water with awful violence. On these occasions the sea foams, and vapours darken the air; the lashing is heard several miles off, like the roar of a distant tempest. Sometimes he makes an immense spring, and rears his whole body above the waves, to the admiration of the experienced whaler, but to the terror of those who see for the first time this astonishing spectacle. Other motions, equally expressive of his boundless strength, attract the attention of the navigator at the distance of miles.

The fins, called by the French *nageoires*, and by Dr Fleming "swimming paws," are placed immediately behind the eyes. They are nine feet long, enclosed by very elastic membranes, and provided with bones similar in form and number to those of the human hand. Such is the spring and vitality of the parts, that, if we may believe De Reste, they continue to move for some time after being separated from the body. According to Mr Scoresby, however, while the whale swims, these organs lie flat on the surface of the water, and are not at all instrumental in producing his motion, which arises entirely from the tail. The fins merely direct and steady the movement, and thus serve rather as a helm than as oars.

The period of gestation in the whale is nine or ten months, and the female brings forth in February or March. She is viviparous; that is, the young come forth alive, not enclosed in an egg; and there is usually only one at a time. These delicate nurselings, only about fourteen feet long, and weighing little more than a ton, are watched over by the mother with the most tender care. The whalers strike these *suckers*, as they are called, not on account of their own value, but under the assurance that the mother will start forth in their defence. Then ensues a contest hard and perilous, but commonly attended with a prosperous issue, for she never seeks safety in flight. She rushes upon the boat, drags the line with extraordinary force, tosses to and fro with extreme agony, and suffers herself to be struck by repeated harpoons without attempting to escape; while the good-natured captain has his triumphant feelings damped by the consideration, that his prize has fallen the victim to such an ardour of maternal tenderness.—According to indications afforded by notches in the whalebone, which seem not, however, very fully established, the whale does not attain his full growth under twenty-five years, and is said to reach a very great age.

There is a considerable variety of whales. The *balæna physalis*, (*balænoptera gibbar* of La Cepède,) called by the sailors *razorback*, is considerably longer than the mysticetus; and though his circumference be smaller, he is on the whole a still larger and more powerful animal. He is also swifter, swimming at the rate of twelve miles an hour; and Mr Scoresby has seen him, when struck with a harpoon, run off 480 fathoms of line in a minute. An individual of this species, found dead in Davis's Straits, measured 105 feet in length; he is, however, a dangerous species to attack, as, by the extreme rapidity of his motion, he often breaks the line, or obliges the sailors to cut it in order to escape destruction. Martens mentions a whale of this kind, which dragged a boat with its crew among loose ice, where they all perished. As this fish contains only ten or twelve tons of oil, of an inferior quality, the whalers generally shun his encounter, unless when they are disposed for a daring adventure, or mistake him, as they frequently do, for a mysticetus. Besides the two pectoral fins, he has a horny protuberance or fin at the extremity of the back, which part of the body, instead of being round as in the mysticetus, rises into a narrow ridge. The *balæna musculus* or broad-nosed whale, the *balæna rostrata* or beaked whale, and the *balæna boops* or finner, may be considered as razorbacks on a smaller scale, with certain specific distinctions. It is usually these smaller whales that frequent the coasts of Norway and Shetland, and sometimes make their appearance in the

British firths; but neither they nor the physalis ever attract the attention of an experienced fisher.

The only species, besides the mysticetus, which is the object of regular whaling operations, is the *cachalot* (*physeter microps*) or spermaceti whale. This variety occurs occasionally in the northern seas, especially on the American coast, but abounds chiefly in the waters bordering on the Antarctic zone, and is the main object of pursuit in the southern fishery. The cachalot does not seem to have met Mr Scoresby's observation, although a male was thrown ashore at Limekilns on the Forth, as described by Sir Robert Sibbald; but, according to the description of De Reste and others, this species is distinguished by a long row of teeth on the lower and none on the upper jaw; the back has a peculiar form, with a small bunch behind: the tail is of extraordinary breadth. The cachalot appears in large herds, while the mysticetus, called by our fishers the *right* whale, is found usually single. These bands very often amount to two hundred, which are said to be mostly female, under the guidance usually of a male of very large dimensions. To attack them is a formidable undertaking; but success is very advantageous, since ten or twelve sometimes fall in one encounter. The perils and adventures of this fishery are described as almost exceeding belief; for which reason, it is to be regretted that Captain Day's modesty makes him decline recounting any of those which he witnessed. The quantity of oil is much smaller than in the mysticetus, not usually exceeding three tons; but, from its being mixed with the substance called spermaceti, is far superior in value. The latter kind of oil, while warm, is fluid; but on being poured into hot water it congeals into large flakes. This whale yields also the peculiar aromatic substance called ambergris, formed under peculiar circumstances in the rectum, and voided as fæces.

Another species, called the *narwal,* about sixteen feet long and eight in circumference, appears to differ little from a small whale, except in a tusk projecting from his upper jaw, three to ten feet in length, which, suggesting to the sailors the idea of a horn, has procured for him the appellation of the sea-unicorn. He is swift, yet is taken without much difficulty, and yields two or three tons of very fine oil. The dolphin, another cetaceous animal of poetic fame, occasionally occurs; and the grampus appears often in numerous herds, guided by some of larger size. The *beluga,* or white whale, is also a small species, distinguished chiefly by its colour.

All the shores and borders of the Arctic zone are crowded with huge amphibious races, which appear to form an intermediate link between whales and quadrupeds,—the *mammalia* of the sea and those of the land. Among these is to be distinguished the morse or walrus, (*trichecus rosmarus,*) which bears such a resemblance to our domestic quadrupeds, that sailors, according to their various impressions, have given it the title of sea-horse or sea-cow. It is a large, shapeless, unwieldy creature, 12 to 15 feet in length, and from 8 to 10 in circumference; the head small, the limbs short, of an intermediate character between fins and legs. As a defence against the extreme cold, these animals not only have skins an inch thick, covered with close hair, but enjoy like the other *cetacea* a coating of oily fat, with which their bodies are completely enveloped.

Thus cased, they lie stretched on the ice in the depth of winter, without suffering any inconvenience. The most remarkable feature of the walrus, however, consists in two teeth or tusks, which project in a curved line from the upper jaw, and are nearly two feet in length. They are of beautiful white bone, almost equal to ivory, and much used in the fabrication of artificial teeth. The front face, when seen at a little distance, bears a striking resemblance to the human ; and its appearance is suspected to have sometimes given rise to the fanciful reports of mermaids seen in the northern seas. Like all the cetaceous tribes, to which the walrus is allied, he is disposed to be peaceful and harmless. Captain Parry describes the supine security with which a number of them lay on the ice, piled over each other, without discomposing themselves at the approach of a party armed for their destruction. But they were doubtless not aware of the deadly weapons with which man is armed, while his physical aspect displays nothing with which they might not deem themselves fully qualified to cope. In Spitzbergen, where they have been long the object of chase to the Russian hunters, they are reported to keep very strict watch ; it being said that one stands guard while the others sleep. Even when sensible of danger, they are not forward to face it, but rather shun the attack by rushing beneath the ice, when those behind, with their tusks, urge forward their companions. Yet when at length compelled to combat, they give battle with the utmost coolness and courage ; they then stand firm by each other, rush in one united body against the boats, and, striking with their tusks, endeavour to overset them. When repulsed too, they repeatedly rally, and yield finally only to the fire-arms of Europeans, or to the stratagems of the Esquimaux. Maternal tenderness, and the determination with which the female defends her young, are equally conspicuous in them as in members of the whale species.

The seal, an animal well known on all the shores of Europe, need not be particularly described. The Arctic species are distinguished by their very great numbers, and by the various, or rather universal purposes to which they are applied by the Esquimaux. They furnish food for his table, oil for his lamp, clothing for his person; even their bones and skin supply materials for his light portable boats and his summer tents.

Before quitting the Polar seas, we must notice another inhabitant, whose migrations render it familiar to all the coasts of Europe. These waters, as already observed, apparently so chill and ungenial, contain not only an ample store of animal life, but a vast superabundance, with which they supply all the seas of the temperate climates. From them in particular, if we may believe the Dutch writers, are derived the extensive and valuable tribes of the herring. Their immense bands break up from their frozen depths about January, and in March appear on the coasts of Iceland. Their column at this time, confined between Greenland and the North Cape, is of comparatively small breadth, but so dense that the water is darkened by them; any wooden vessel let down brings up several: they may even be taken by the stroke of a lance. They follow certain of their number larger than the rest, called kings. These kings are held in much respect by the Dutch, who studiously spare their majesties, and even liberate them when found in the net, lest, deprived of this royal guidance, the nation should not find the way to their accustomed haunts. After emerging from the Greenland sea, this great army divides into two wings, of which the right and largest bears down directly upon Scotland; at the north-eastern extremity of which it forms that immense field, in which the Dutch for so many years carried on their great national fishery. They are now rivalled by the boatmen of Wick and Thurso. A detachment smaller in number, but some of which attain to superior excellence, fills the western bays of Scotland, and, passing along Ireland, reaches the neighbouring coast of France. Meantime the left, or smaller wing, after ranging the Norwegian shore, has entered the Baltic. In July all these advancing divisions halt, and by an unknown impulse begin to retrace their course towards their northern home. De Reste considers it certain, that the herrings, in returning, have a general point of rendezvous not yet discovered; but it should seem that only the actual discovery of this rendezvous can ascertain its existence. However, about the end of September they reach their residence beneath the ices of the Pole, where they remain three months; all the rest of the year being spent in wandering over the face of the ocean.

Although the object of Providence in leading the herring this immense annual round is doubtless that of furnishing food to numerous animals, and especially to man, yet the immediate impulse by which they are urged to so extensive and regular a movement has been the subject of much controversy.

Anderson supposes that they fly before the numerous large fishes which fill the Arctic seas, and by which they are pursued and devoured, and that they form themselves into close bands with a view to self-defence. But the regular course which they follow, year after year, and their constant return at a fixed period, suggests nothing of that tumultuous flight which such a panic would have prompted. It seems more probable, that they are led by those instincts which guide fishes to deposit their spawn in places remote and dissimilar to their usual abode. The female herring, when taken on the coasts of Britain, is found commonly to contain a roe, and as this roe comprises the embryo of ten thousand future herrings, such a prodigious fecundity easily repairs all the havock committed upon the species, not only by its brethren of the deep, but also by the ingenuity of man constantly exerted for its capture and destruction.

The other animals which frequent the Polar regions belong chiefly or wholly to the land.

In the caves of the rocks, or in the hollows of the ice, dwells the most formidable of Arctic quadrupeds, the Greenland or Polar bear. This fierce tyrant of the cliffs and snows of the north unites the strength of the lion with the untameable fierceness of the hyena. A long shaggy covering of white soft hair and a copious supply of fat enable him to defy the winter of this rigorous climate. Under the heat of Britain he suffers the most painful sensations; Pennant saw one, over whom it was necessary from time to time to pour large pailfuls of water. Another, kept for some years by Professor Jameson, evidently suffered severely from the heat of an Edinburgh

summer. The haunt of the bear is on the dreary Arctic shores, or on mountains of ice, sometimes two hundred miles from land; yet he is not, strictly speaking, amphibious. He cannot remain under water above a few moments, and he reaches his maritime stations only by swimming from one icy fragment to another. Mr Scoresby limits the swimming reach to three or four miles; yet Parry found one in the centre of Barrow's Strait, where it was forty miles across. This bear prowls continually for his prey, which consists chiefly of the smaller cetacea and of seals, which, unable to contend with him, shun their fate by keeping strict watch, and plunging into the depths of the waters. With the walrus he holds dreadful and doubtful encounters; and that powerful animal, with his enormous tusks, frequently beats him off with great damage. The whale he dares not attack, but watches anxiously for the huge carcass in a dead state, which affords him a prolonged and delicious feast: he scents it at the distance of miles. All these sources of supply being precarious, he is sometimes left for weeks without food, and the fury of his hunger then becomes tremendous. At such periods, man, viewed by him always as his prey, is attacked with peculiar fierceness.

The annals of the north are filled with accounts of the most perilous and fatal conflicts with the Polar bear. The first, and one of the most tragical, was sustained by Barentz and Heemskerke, in 1596, during their voyage for the discovery of the north-east passage. Having anchored at an island near the strait of Waygatz, two of the sailors landed, and were walking on shore, when one of them felt himself closely hugged from behind.

Thinking this a frolic of one of his companions, he called out in a corresponding tone, "Who's there? pray stand off." His comrade looked, and screamed out, "A bear! a bear!" then running to the ship, alarmed the crew with loud cries. The sailors ran to the spot, armed with pikes and muskets. On their approach the bear very coolly quitted the mangled corpse, sprang upon another sailor, carried him off, and, plunging his teeth into his body, began drinking his blood at long draughts. Hereupon the whole of that stout crew, struck with terror, turned their backs, and fled precipitately to the ship. On arriving there they began to look at each other, unable to feel much satisfaction with their own prowess. Three then stood forth, undertaking to avenge the fate of their countrymen, and to secure for them the rites of burial. They advanced, and fired at first from so respectful a distance that all missed. The purser then courageously proceeded in front of his companions, and, taking a close aim, pierced the monster's skull immediately below the eye. The bear, however, merely lifted his head, and advanced upon them, holding still in his mouth the victim whom he was devouring; but seeing him soon stagger, the three rushed on with sabre and bayonet, and soon despatched him. They collected and bestowed decent sepulture on the mangled limbs of their comrades, while the skin of the animal, thirteen feet long, became the prize of the sailor who had fired the successful shot.

The history of the whale-fishers records a number of remarkable escapes from the bear. A Dutch captain, Jonge Kees, in 1668, undertook, with two canoes, to attack one, and with a lance gave him so dreadful a wound in the belly, that his immediate death seemed inevitable. Anxious, therefore, not to injure the skin, Kees merely followed the animal close, till he should drop down dead. The bear, however, having climbed a little rock, made a spring from the distance of twenty-four feet upon the captain, who, taken completely by surprise, lost hold of the lance, and fell beneath the assailant, who, placing both paws on his breast, opened two rows of tremendous teeth, and paused for a moment, as if to show him all the horrors of his situation. At this critical instant, a sailor rushing forward with only a scoop, succeeded in alarming the monster, who made off, leaving the captain without the slightest injury.

In 1788, Captain Cook of the Archangel, when near the coast of Spitzbergen, found himself suddenly between the paws of a bear. He instantly called on the surgeon who accompanied him to fire, which the latter did with such admirable promptitude and precision, that he shot the beast through the head, and delivered the captain. Mr Hawkins of the Everthorpe, in July 1818, having pursued and twice struck a large bear, had raised his lance for a third blow, when the animal sprang forward, seized him by the thigh, and threw him over its head into the water. Fortunately it used this advantage only to effect its own escape. Captain Scoresby mentions a boat's crew which attacked a bear in the Spitzbergen sea; but the animal having succeeded in climbing the sides of the boat, all the sailors threw themselves for safety into the water, where they hung by the gunwale. The victor entered triumphantly, and took possession of the barge, where it sat quietly till it was shot by another party. The same writer mentions the ingenious contrivance of a sailor, who, being pursued by one of these creatures, threw down successively his hat, jacket, handkerchief, and every other article in his possession, when the brute pausing at each, gave the sailor always a certain advantage, and enabled him finally to regain the vessel.

Though the voracity of the bear is such, that he has been known to feed on his own species, yet maternal tenderness is as conspicuous in the female as in other inhabitants of the frozen regions. There is no exertion which she will not make for the supply of her progeny. A she-bear, with her two cubs, being pursued by some sailors across a field of ice, and finding that, neither by example, nor by a peculiar voice and action, she could urge them to the requisite speed, applied her paws and pitched them alternately forward. The little creatures themselves, as she came up, threw themselves before her to receive the impulse, and thus both she and they effected their escape.

Bears are by no means devoid of intelligence. Their schemes for entrapping seals, and other animals on which they feed, often display considerable ingenuity. The manner in which the Polar bear surprises his victim, is thus described by Captain Lyon :—On seeing his intended prey, he gets quietly into the water, and swims to a leeward position, from whence, by frequent short dives, he silently makes his approaches, and so arranges his distance, that at the last dive he comes to the spot where the seal is lying. If the poor animal attempts to escape by rolling into the water, he falls into the paws of the bear; if, on the contrary, he lies still, his destroyer makes a powerful spring, kills him on the ice, and devours him at leisure. Some sailors, endeavouring to catch a bear, placed the noose of a rope under the snow, baited with a piece of whale's flesh. The bear, however, contrived, three successive times, to push the noose aside, and to carry off the bait unhurt. Captain Scoresby had half-tamed two cubs, which used even to walk the deck; but they showed themselves always restless under this confinement, and finally effected their escape.

According to Pennant and other writers, the bear forms chambers in the great ice-mountains, where he sleeps the long winter night, undisturbed by the roar of the northern tempest; but this regular hibernation is doubted by many recent observers. The fact seems to be, that the males roam about all winter in search of prey, not being under the same necessity of submitting to the torpid state as the black bear of America, which feeds chiefly on vegetable food; but the females, who are usually pregnant during the more rigorous season of the year, seclude themselves for nearly the entire winter in their dens.

The animals which belong entirely to the land, and feed on herbage, are, in a climate covered deep with snow for nine months in the year, necessarily few both in number and species. The rein-deer, a most patient and useful creature, the standing inhabitant of all the northern lands, reaches nearly as far as animal life can subsist. To the Laplander he is all in all; and in that climate he can always dig from under the snow the moss or lichen, his favourite food. Even in the severer Arctic climates he carries his summer excursions as far as men have yet penetrated; but at the end of October the deeply-frozen earth allows him no longer to reach even the simple food in which he delights. They then assemble in large herds, and migrate to the southward. From Melville Island they were even seen crossing the frozen surface of the sea, to reach a milder climate on the American shore. The people within the Arctic zone do not tame the rein-deer, or yoke it in the sledge; it is not even for them the staff of life; but it affords a favourite object of summer chase, gives an agreeable variety to their meals, and yields their warmest and most valuable winter robes. The fur-skin becomes always richer and more copious in proportion to the intensity of the cold, against which it forms the only, but a sufficient defence. In the chase the deer fall easy victims, even to the rude archery of the Esquimaux, being so simple and curious, that, if a man merely walks away from them, they follow. Some of these animals who joined Captain Parry's crews on Melville Island played round them like lapdogs, and at setting out in the morning used to gambol by rearing on their hind-legs. The musk-ox, the only member of the bovine species which penetrates the Arctic zone, though in smaller numbers, affords a wholesome and agreeable variety of food. Its unwieldy form is protected from the cold by an immense profusion of hair, which envelopes its whole limbs and figure, and also by an interior layer of wool, which appeared to Pennant the finest he had ever seen, and made, he was told, stockings superior to the richest silk. This last, we suspect, is a temporary winter clothing.

The canine race affords several species which brave the most extreme severity of the Arctic cold, and remain after every other land-quadruped, except the bear, has taken its flight to the southward. Wolves, in considerable packs, continue still to seek their prey in the utmost depths of the Polar winter.

It seems difficult to discover what food they find at that season; but a regular pack attended the English discovery-ships, watching for whatever offal might be found exposed, and serenading them with nightly howlings. As if by a sort of tacit convention, they did not presume to attack the sailors, but they advanced in the most daring manner to the sides of the ships, and sometimes even entered the huts of the Esquimaux, whose dogs they esteemed the choicest prize, and very speedily devoured them. The natives catch them by traps formed of little sheds of ice, at whose entrance is a portcullis of the same material, connected in such a manner with the bait within, that, when the latter is seized by the animal, the portcullis drops, and the wolf is taken. Their tenacity of life is such as often, after apparent death, to cause surprises and even dangers. The Arctic fox, a small beautiful white animal, with woolly hair like a little shock-dog, occurs in still greater numbers. About a hundred were caught in Captain Parry's second voyage, some of which were half-tamed and made pets of; while others, by a harder fate, were dressed for table; and their flesh, somewhat resembling kid, afforded an agreeable relief from the constant use of salted meat.

The dog, however, is the most important quadruped of the Arctic world, and the most valuable possession of its people, who have succeeded in taming and rendering it equally valuable for draught and hunting. The dogs of the Greenlander, the Esquimaux, and the Kamtchadale, are large, and of a somewhat wild aspect. Captain Lyon describes them as resembling in form the shepherd's dog, rising to the height of the Newfoundland, but broad like the mastiff, having short pricked ears, a furry coat, and a bushy tail. In general, they are observed to bear a strong resemblance to the wolf, and the opinion is even prevalent that they are neither more nor less than tamed wolves. Parry and Richardson both mention instances in which domestic dogs were seduced away by the attractions of female wolves; yet the avidity with which the wolf devours these, his supposed tame brethren, does not seem very indicative of so close an affinity. Nature, with provident care, defends them against the cold, not only by a profusion of long hair, but by a soft downy covering, formed beneath it at the commencement of winter, and shed at the approach of a milder season. The Esquimaux are much reproached for their harsh treatment of these valuable servants; yet in infancy they are used with tenderness, the women often taking the young puppies into bed, and feeding them from their own mouths. As soon as they can walk they are yoked to a small sledge; in endeavouring to shake off which encumbrance they learn to draw it. Severe and frequent beatings, however, are necessary to train them for acting as a regular team. But their most severe privation is in food; of which, during the season of scarcity, they obtain a portion barely sufficient to maintain life, and not at all to prevent them from falling into a state the most meagre and debilitated. Their hunger is manifested by the nature of the substances with which they sometimes seek to assuage it. Captain Parry saw one which ate a large piece of canvass, a cotton handkerchief laid out to dry, and a piece of a linen shirt. The Esquimaux, we must recollect, are subject to severe scarcities, and the food of the dogs being the same with their own, the animals, on such emergencies, can scarcely expect to be placed on a footing of equality. This rough usage does not seem incompatible with a measure of solid attachment to these valuable servants. The natives refused to sell them to the English, till assured that they would not be killed. They rejoiced greatly to see a house built for them; and at every visit a friendly recognition took place between the dog and his old master. When the animals are yoked in the sledge, a whip of twenty feet long enforces obedience, while peculiar cries indicate the right or left, to turn or to stop. 'Three dogs could draw a sledge weighing 100 lbs., at the rate of a mile in six minutes, and one leader has drawn 196 lbs. the same distance in eight minutes. A full team, however, comprises eight or ten dogs; though seven have drawn a full sledge at the rate of a mile in four minutes and a half; while nine, employed in conveying stores from the Hecla to the Fury, drew 1611 lbs. in nine minutes. Captain Lyon reports most favourably of the team which he himself formed, who used to draw him from ship to ship, a mile distant, in the deepest darkness and amid clouds of snow-drift, with the most perfect precision, when he could not have found his own way for a hundred steps. Their services in hunting are also of great value; they can snuff the seal in his hole, or the deer on the mountains, from a surprising distance. Assembled in packs, they face even the Polar bear, keeping him at least at bay till their masters come up with spears to the attack.

The air in those dreary regions is, almost as much as the waters, peopled with its appropriate inhabitants, who fill it continually with sound and life. Here, too, the species are nearly all different from those which wing their flight through the temperate skies. They do not shine with the bright hues of the humming-bird, nor breathe the soft notes of the nightingale, nor do they charm the air with the rich melody of our woodland choirs; but the auk, the petrel, and the gull, clustering in myriads, cause all the rocks and shores of the north to echo with their wild clang. They are almost all rapacious and carnivorous; the vast collections of shell-fish and marine insects with which those seas abound, and the carcasses of the huge animals which are killed either in conflicts with each other or with man, affording them an inexhaustible supply of nutriment.

The fulmar, or petrel (*procellaria glacialis*), is the close attendant of the whale-ships in every stage of their progress. Termed emphatically the bird of storm, it faces the northern tempest when raving with its utmost fury, and seats itself on the agitated crest of the mountain-wave as calmly as if resting on the surface of an untroubled lake! It follows with one uniform object,—that of snatching and feasting on portions of blubber. As soon as a whale is fastened to the side of the ship, and begins to be cut up, an immense muster takes place, sometimes exceeding a thousand, all stationed in the rear, watching for the fragments which are wafted to leeward. The peculiar chuckling noise by which they express their eager expectation, the voracity with which they seize on the fat, and the huge morsels which they swallow,—the envy shown to those who have obtained the largest of these delicate morsels, and often the violent measures taken to wrest it from them,—afford to the sailors curious and amusing spectacles. The surface of the sea is sometimes so covered with them, that a stone cannot be thrown without one being struck. When an alarm is given, innumerable wings are instantly in movement, and the birds, striking their feet against the water to aid their flight, cause a loud and thundering plash.

The petrel, however, does not enjoy alone this delicious ocean-festival. It is sought with equal avidity by the various species of the *larus* or gull—the Arctic gull, the kittiwake, and the snow-bird (*larus eburneus*), which last excites admiration by its pure and beautiful white; but the elegance of its taste does not correspond to that of its appearance, fat blubber being its choicest luxury, while it utters a loud and disagreeable scream. But all these ravening tribes of the northern sky have a terrible rival in the glaucous gull (*larus glaucus*), who equals in rapacity and surpasses them all in power and strength. In consideration of this, the Dutch have invested him with the title of *burgomaster;* but that sage magistrate uses, we trust, his power in a very different manner from his winged representative, who employs it solely in wresting from the weaker species whatever he sees them possess, and esteems desirable. He is usually hovering high in the air, or seated on the loftiest icy pinnacles, whence, having fixed his eye on a delicious morsel, he darts down on the possessor, which, whether fulmar, snow-bird, or kittiwake, must instantly resign the coveted prize. Happily for these races, the burgomaster species is very small in number, compared to the multitudes over whom he tyrannizes.

The genus *anas*, comprehending the swan, the goose, and the duck, large, useful, and often beautiful birds, traverse in vast flights all the northern seas and waters. Like the rest of the *anseres*, they have all webbed feet, consisting of branching toes connected by a membrane, which enable them to move with equal facility in the water as on land. The swan, with its stately plumage, frequents chiefly the inland seas and lakes, of which it has been called the peaceful monarch. The goose, a less elegant but more useful species, migrates in vast numbers every spring to breed on the Arctic shores and islands, and affords a valuable supply of food to all the northern settlements. The Hudson's Bay Company salt three or four thousand annually for winter. The Indians celebrate the month of their arrival under the title of the goose-moon. Migration during the rigorous season, resorted to even by quadrupeds, becomes the still more natural resource of the feathered creation. Even in September the flocks of geese, winging their way to the southward, supplied a warning to Captain Franklin of the winter that was closing in upon him.

The duck reaches a still higher latitude than the goose, and endures still severer cold. Great flocks of that species called the eider arrive in spring on the most northern shores of Greenland. All the birds that fly over the frozen seas are provided by nature with a rich and ample plumage, and a lining of soft down beneath ; and the people of these countries find the skins of birds, with the feathers inside, to be one of their most comfortable articles of clothing. But the down of all the known species of birds is surpassed in fineness by that of the eider, the delicious softness of which fits it for the couch of kings. A pound of eider-down, according to Sir

Charles Giesecke, is usually sold for a pound sterling. The finest is that which the birds pluck from their breast to line the interior of the nest. The Greenlander, watching his time, removes this precious lining as soon as it is completed, whereupon the poor animals form a second, destined to share the same fate.

Among other Arctic birds are the terns, which on the American coast are so very numerous, that an island has been named from the immense flocks with which it is annually filled. They produce the most delicate eggs of any water-bird. We may add the *colymbus* (guillemot), whose skin affords a peculiarly comfortable clothing,—the *tringa* (sandpiper), —the *charadrius* (plover),—the *tetrao* (grouse, and ptarmigan), of which a species, much valued on account of the delicacy of its flesh, occupies the interior of Greenland. All ptarmigans change their colour from mottled gray or brown in summer, to pure white during the winter months. According to De Reste, the dark summer covering is shed at the end of autumn, and a new plumage shoots out, which is white, till darkened by the warmth of the following spring—or, to speak more accurately, a partial moult takes place in autumn, during which all the coloured feathers are thrown out, and their places supplied by white ones, while in spring most of these white plumes are again cast, to make room for others, adorned by the richer and more varied hues of summer. Captain Parry saw this last change go on so rapidly among the grouse on Melville Island, as to be perceptible from day to day.

The *vegetable world* does not, in this dark and outer boundary of the earth, possess such an important and commanding character as the animal. Nature, without departing wholly from her system and laws, could not clothe with verdure and vegetation a soil which for nine months of the year is frozen as hard as rock, and covered with snow many feet deep. The plants of more genial climates, indeed, when inserted during the short and bright summer, spring up and wear for some time a promising appearance; but they are all nipt by the untimely winter. Still, Nature, in the northern regions, especially in those approaching the Arctic zone, does employ resources similar to those by which she cherishes animal life. The fir, the pine, and other trees of these climates, on being pierced, distil, not the balmy and fragrant gums of Arabia and India, but rich, thick, coarse juices, by which their interior heat has been preserved, and which, in the shape of pitch, tar, and turpentine, serve many valuable purposes of commerce. Through the cherishing influences of these juices, the lakes of North America are bordered with tall dark forests, which afford to the agricultural countries an inexhaustible supply of valuable timber. Even their gloomy foliage, while the forests of the south are every autumn strewing the ground with their faded leaves, brave through the winter all the fury of the northern tempest. Before reaching, however, the inclement sky of the Arctic boundary, this magnificent growth decays. Trees that had been the pride of the forest dwindle into meagre and stunted shrubs. Beyond the Polar circle, these monarchs of the wood, if they appear, rise only to the height of a few feet, throwing out lateral branches. On Melville peninsula, dwarf-willow and the *andromeda tetragona* almost alone afforded to the Esquimaux a scanty supply of wood for their arms and utensils. Considerable quantities of drift-timber are, however, frequently found along many of the barren shores of the Arctic regions, supposed to have floated originally from the mouths of the Siberian and other northern rivers.

The plants which abound most in these dreary climates belong to the tribes of mosses and lichens, the *cryptogamia* of Linnæus, the *acotyledones* of Jussieu. The meagre vegetation with which the Arctic surface is covered thus appears rather as if it were an exudation from the rocks than the produce of the soil. Yet the moss and lichen, which form the prevailing features, are not only copiously produced, but possess a nutritious and salutary quality, not displayed in more fortunate regions. One species of lichen (*L. rangiferinus*) forms, as it were, the main staff of life to the Laplander; it supports the rein-deer, and the rein-deer supports him. The lichen of Iceland, boiled in soup, or even converted into bread, is to the natives a substantial part of their subsistence. Farther north, where the depth of the snow, and the continuance of frost, drive the inhabitants to the shore and to animal food, these vegetables still afford support to the deer and to the other quadrupeds which they use as food. It is even with a peculiar species of moss that they trim their lamps. The *fungus* or mushroom, which draws nourishment without the aid of a proper root, and the *filices* or ferns, which consist only of one spreading leaf, the middle rib of which forms all their stalk, while their slender roots spread under the ground,—these find the means of existence even in Greenland.

The order *alga*, and especially its genus *fucus*, comprehending nearly all the variety of marine botany, grows in vast abundance on the northern shores. These rude plants, which have little or no distinction of stem, root, or leaves, and whose fructification is often included within the substance of the frond, cover the Greenland coast with submarine meadows. The *confervæ*, too, with their numerous filaments, spring up in profusion.

A few plants, not belonging to this imperfect order of vegetation, embellish, during the short summer gleam, the northern fields. Under the bright influence of the sun at this season, indeed, some of the most beautiful among the floral tribe expand their petals. The ranunculus and anemone display their rich and varied tints; several species of saxifrage put forth their flowers; and the yellow poppy has even a gaudy appearance—so that the genus papaver, which enriches the plains of Indostan, is among the last to expire under the snows of the Pole. The nobler fruits do not ripen under this ungenial sky; yet shrubs producing delicious berries appear on the borders, at least, of the Arctic zone in matchless profusion. The northern Indians consider the fruit of a bush called the *aronia ovalis* as the most delicious food; besides which they have the strawberry, raspberry, red whortleberry, and various others. Several of these are covered beneath the first snows of winter, which are supposed to mellow them, and which, when dissolved by spring, show the berries still hanging on the branches, while the buds of all the others are bursting,—the whole producing a delicious impression unknown to those who have not witnessed the desolation which immediately preceded.

These bleak climates enjoy a precious boon in the plants which act as an antidote to scurvy, and which defy the most severe cold of the Arctic zone. The *cochlearia*, a thick tufted juicy plant, of extreme fecundity, is emphatically called *scurvy grass;* and the different species of sorrel, especially the *rumex digynus*, were found by Captain Parry flourishing under the snow at the very farthest limit of vegetation.

The extraordinary phenomenon of *red snow*, observed by Captain Ross and our other Arctic voygers, naturally excited the greatest interest both at home and abroad. This singular aspect of a substance, with which we never fail to associate an idea of the purest and most radiant whiteness, has been ascertained to result from an assemblage of very minute vegetable bodies, belonging to the class of cryptogamic plants and the natural order called *algæ*. They form the species named *protococcus nivalis* by Agardh, which is synonymous with the *uredo nivalis* of Mr Bauer. This plant seems by no means peculiar to the Arctic snows, but occurs on limestone rocks in the island of Lismore in Scotland, as well as among the Alpine and other countries of Europe. Saussure observed it so long ago as in the year 1760 on Mount Breven in Switzerland, and so frequently after that period that he expresses his surprise at its having escaped the notice of Scheuchzer and other learned travellers. Ramond, whose observations so beautifully combine the precision of science with the perception of the picturesque, found red snow on the mountains of the Pyrenees, as did Sommerfeldt, the botanist, on those of Norway. In the year 1818 vast masses of the same substance overspread both the Apennines and the Italian Alps; and it is recorded, that ten years prior to that period the vicinity of Belluno and Feltri were covered to the depth of twenty centimètres with rose-coloured snow.

According to Captain Ross, the Arctic mountains on which he observed the red snow are about 600 feet high, and extend eight miles in length. The depth to which the colour penetrated has been variously stated by different observers. Some found that it descended many feet beneath the surface, while others never ascertained that it spread beyond one or two inches. There is no reason to suppose that the colouring matter itself, as well as the snow, is a meteorological product, although Humboldt certainly mentions a shower of red hail which fell at Paramo de Guanacos, in South America. Moisture is no doubt essential to the production of this plant, as it is to that of all the other algæ; but when once formed, it seems to possess the power of continued and increasing vegetation, even over rocks and stones, with only an occasional supply of fluid. The propagation of minute vegetable forms, like the increase of animalcules, is effected, under favourable circumstances, with a rapidity of development truly astonishing; and the most probable conjecture seems to be, that snow is not the natural situation of the *protococcus nivalis*, but that, from its great tenacity of life, it not only preserves its vitality on that chilly and ungenial surface, but, during the partial thawing of the snow, continues to increase and multiply. If such be the case, it is easy to suppose how a wide expanse may be covered with this red suffusion, during the dissolving and occasional flowing of the snowy waters. When once established among the eternal snows of the north, it becomes more numerous than the sands of the ocean; and, increasing in density from year to year, at last presents to the astonished and admiring navigator a sight more surprising in its reality than any of the fabled wonders of an Arabian tale.

A singular coincidence has been observed by botanists to exist between a white ground and a red flower. Thus the rich and brilliant variety of *anthyllis vulnaria* is only found on a chalky surface; and many of the higher orders of flowering plants show a decided tendency to produce red-coloured petals when they happen to spring up on white limestone. "How much more forcibly then," says Agardh, "must this law operate upon plants like the algæ, in which colour is an essential part." That excess of light produces the peculiar, or at least prevailing colour of the snow-plant, may be said to be demonstrated by this singular fact, that the red colour gradually changes to green as it occurs more or less secluded from the action of light among the fissures of rocks, or beneath the hollows or under surfaces of stones. This being the case, it will appear the less incomprehensible that the same plant which is produced amid the snows of the Arctic regions, or the highly-elevated Alps of more southern countries, should be occasionally detected, even during the heats of summer, covering the brilliant white limestone of the plains. In the last-named locality it was discovered by the Baron Wrangler in the province of Nerike, and named by him *lepraria kermesina;* and the two supposed species have been since ascertained to be one and the same.

In concluding our notice of this singular subject, we may observe, that when the warmth of the returning sun has partially dissolved the surface of the snow, and thus contributed to the formation and development of these microscopical plants, the vivifying power of the solar light, aided by some peculiar and as yet unknown property belonging to the natural whiteness of the snow itself, is highly influential in the production of the beautiful colour by which they are distinguished.

CHAPTER III.

Ancient Voyages to the North.

The voyages to the north, undertaken prior to the great era of maritime enterprise and the invention of the compass, were few in number, and scarcely extended into those circumpolar regions which form the special subject of the present volume. It will be enough, therefore, to take a rapid sketch of the steps by which discovery proceeded towards these remote and almost inaccessible quarters.

The Mediterranean, the shores of which constituted the first civilized portion of the west, was the quarter where European navigation originated. As Tyre, situated in the depth of that sea, was the earliest seat of commerce, Carthage, the daughter of Tyre, was doubtless the first state which undertook any extensive discoveries upon the ocean. These, however, were shrouded in deep mystery, prompted by the jealous and monopolizing temper of this people, once so powerful and opulent. The classic writers give only some slight and detached notices of the voyage of Himilco, who appears to have sailed along the exterior coasts of Spain and France, and to have reached the southern extremity of Britain. This was probably only the first of a series of voyages carried on with the view of procuring tin, a metal rare and valued in those days. The Cassiterides, or islands of tin, which appear to be Cornwall and the Scilly isles combined together, are a mysterious and celebrated name among the primitive authors of Europe.

The most distinguished of the Greek navigators to the north was Pytheas, a citizen of Marseilles, a commercial Greek colony, which, favoured by its situation, had become the chief emporium of the commerce of Britain, already of some importance. This commerce, however, was carried on, not by the ocean, but by a land-carriage through Gaul. Pytheas seems the first who, inspired by motives of intelligent curiosity, endeavoured by a maritime route to reach the British coast, and to penetrate to the remotest extremities of the north. Our knowledge of this voyage is indeed imperfect, since it is almost entirely due to Strabo, who, while he relates it, derides the whole as a palpable forgery; yet the very particulars on which he founds this charge go far to establish the contrary. Pytheas appears to have passed the Straits, and sailed along the western coasts of France and Spain, which, from previous misconception, he confounds together. Thence he seems to have directed his course through the English Channel, and along the eastern coasts of England and Scotland, till he reached the northern extremity of the island. Not content with this achievement, he continued to sail onwards into the depths of ocean, till in six days he arrived at Thule, an island, where it appeared to him that perpetual light reigned at midsummer through the day and night. Immediately beyond, his progress was arrested by a barrier of a peculiar nature, by something which was neither earth, air, nor sky, but a compound of all the three, forming a thick viscid substance, through which it was impossible to penetrate. These statements have afforded much advantage to the sceptical adversaries of Pytheas; yet the summer days of Shetland are really very long, and the thick and gloomy mists, with which the northern sea is often loaded, might make a peculiar impression on one who had ventured into this unknown ocean, so far beyond the limit of former navigation: they might make him prone to believe that he had arrived at the farthest boundaries of nature. It seems difficult, however, to suppose, with Bougainville, that the voyage of Pytheas should ever have extended as far as Iceland; but in another direction he appears to have penetrated to the Baltic, and also to have brought home some correct accounts of its shores, then known to the people on the Mediterranean almost solely by the qualities of the amber which was imported from thence.

The voyage of Pytheas, though apparently quite authentic, did not lead to any change in the channels of Massylian trade. It was found probably both cheaper and more commodious to transport the productions of Britain through Gaul, than to convey them by means of such a lengthened and perilous voyage. The only farther additions to ancient knowledge respecting the Northern Seas were made by the Romans, who, in order to conquer, were obliged to explore the earth. Agricola, before undertaking the campaign which was to reduce Scotland into a province, sent fleets to explore its most northern shores and bays. The Romans, however, never appear to have sent naval expeditions, having discovery alone in view, to the north, or perhaps to any other quarter.

Their delineation of Scotland itself is excessively rude; and though they had traced the shores of Europe eastward as far as Russia, Scandinavia appeared to them only as a cluster of large islands in the North Sea.

In the decline of the Roman empire, that country, formerly almost unknown, became the seat of a most formidable and extensive naval power. Norway, under the terrible dominion of Harold the Fair-haired, Denmark under Gorm and Canute, sent forth fleets which pillaged all the maritime territories of Europe, and reduced many of them to temporary or even final subjection. Their expeditions, however, were *from* the north, not *to* the north. Their objects were not science, but ravage and conquest. The Runic tribes, indeed, were not without some tincture of letters and poetry; but their *sagas*, or poetical chronicles, celebrate only the exploits of their mighty sea-kings and rovers, not any theme connected with commerce and the arts of peace. Yet a communication with these tribes enabled Alfred, an illustrious monarch, who shone so bright in that dark age, to collect information respecting those extremities of the earth which had remained unknown to the Greeks and Romans. Ohthere, a chief who had come from the upper tracts of Norway, afforded some intelligence even respecting a voyage undertaken along the Arctic shores of Europe.

Ohthere was considered a rich man in his own country, being owner of twenty oxen, twenty sheep, and six hundred tame rein-deer. Fired by a spirit of liberal research, he undertook a voyage to discover the regions which lay to the north of the high latitude in which his domain was situated. He sailed six days in that direction, which appears to have brought him to the North Cape, the farthest point of Europe; he then turned three days towards the east, and afterwards five days to the south. All this while the land on his right was desolate, traversed only by a few wandering shepherds and hunters, of Finnish race. Then, however, he reached a large river, the opposite side of which was somewhat densely inhabited by the Biarmians, or people of northern Russia, who showed such a hostile disposition as obliged him to return. The fishery of the horse-whale (walrus) was found to be carried on here with such advantage, that many were afterwards induced to follow the same course. Forster delineates the navigation of Ohthere as reaching to the interior of the White Sea; but we do not think the period of eight days from the North Cape could have carried him farther than the river Kola, which agrees also with the supposition of his having been arrested on the frontier of Russian Lapland.

The direction in which the Northmen sought rich kingdoms to plunder and to conquer was always the south. To quit their bleak regions in search of others still more bleak, would have been wholly foreign to their views; yet, as the sea was covered with their sails, chance and tempest sometimes drove them in that other direction. In 861, Nadodd, during a piratical excursion, unexpectedly discovered Iceland. This country had little to tempt a nation of freebooters; yet so it chanced, that there existed materials for its colonization. Harold, in making himself master of all Norway, had crushed the rights and sway of numerous petty chieftains, and had thus created a large body of malcontents. He was willing to grant, and they to accept, a permanent refuge in this frozen clime. Numerous bodies of emigrants proceeded successively to Iceland, where they were organized into a free and independent community. They even crossed to the opposite coast of Greenland, and formed settlements, which for some time were tolerably flourishing, though they have since either perished or lost all communication with Iceland. During the eleventh century, however, chance or enterprise led Greenland navigators southward to another coast, which they called Vinland, and which has been very generally believed to be America, though, after a careful examination of the authorities on which this opinion rests, we have been led to suppose that the new country was merely a more southern point of Greenland. The limits of the present work, however, will not admit any detailed account of these settlements.

The republican cities of Italy, during the middle ages, rekindled the extinct spirit of commerce and navigation, which they raised to a degree of prosperity equalling probably that attained by Tyre and Carthage during the height of their ancient glory. These cities reached a measure of power and opulence which enabled them to rank with the greatest kingdoms. Their trade, however, lay chiefly within the Mediterranean, especially its eastern border, whither were brought overland or by the Red Sea the commodities of India. Few were disposed to quit this bright and golden track to face the tempests of the ocean and of the north ; yet were there not wanting a few adventurous spirits who undertook and were able to penetrate into these remote seas.

Nicolo Zeno, an eminent and noble merchant of Venice, undertook, in 1380, a voyage to Flanders, during which a tempest drove him upon a coast which he calls Friesland. The position of this unknown shore has been a subject of controversy*; and some have even had recourse to the hypothesis of its having been since swallowed up by the ocean. When, however, we find that Friesland was in fact a cluster of islands, to which are applied the names, Talas, Broas, Bres, Iscant, easily converted into Zeal, Brassa, Unst, we may conclude with Forster that it is probably one and the same with the Shetland Isles. Zeno being cast ashore in a state completely destitute, was received with great kindness by the Prince Zichmni, whose name seems to be a corruption of Sinclair. Finding Zeno eminently skilled in naval affairs, he reposed the highest confidence in him, and placed under his command various naval expeditions. So pleased was the Venetian with the favour of this northern potentate, that he invited his brother Antonio to join him. The only voyage, however, which seems to have carried him far to the north was one to Greenland, and he gives a somewhat romantic account of a religious establishment formed in that country. The convent was built on the side of a hill, whence burst a copious boiling spring, whose waters enabled the monks to vanquish all the evils of the climate; when spread on the frozen soil, they applied it for the production of the most useful herbs and culinary plants; when introduced into the houses, they warmed with it the apartments, and cooked the victuals. They were likewise supplied from the country with abundance of fish, rein-deer, and wild fowl; and vessels from Norway brought to them the luxuries of life. Zeno undertook other voyages in a different direction, which have even been supposed to reach as far as America; but we incline to think that the passages which have suggested this conclusion are either misunderstood or interpolated.

Quirini, another Italian nobleman, in 1431, undertook a similar voyage, and was driven by a similar tempest on the coast of Norway. The southern mariners arrived in the most miserable plight, having lost the ship and been obliged to take to their boats, after the greater part of the crew had perished of hunger, cold, and especially thirst. They were thrown first on a small uninhabited island, where, having erected two tents, and found a large fish, they contrived to support life. After some days, a fisherman and two boys came in a boat to the island, and were at first terrified by the sight of the strangers; but, by courteous address, were soon prevailed upon to take with them two of the sailors, Gerard of Lyons and Cola of Otranto. They rowed to a village on the neighbouring island of Rost, where they met the kindest reception. As it chanced to be Sunday, the priests exhorted the congregation to afford all the assistance in their power to these unfortunate strangers. Six boats were fitted out, the appearance of which dispelled all the fears of Quirini, and filled him with joy. The chief native now gave a cordial welcome, and having set before him some rye bread and beer, invited him to the habitations on the island. The Italians were there received and treated with uninterrupted kindness during a stay of three months, in which time they completely recovered from all their distress and fatigue. The natives of this little island, about 120 in number, subsisted on stock-fish, which they dried and carried to the market of Bergen, where purchasers arrived from Germany and other countries; also on sea-fowl, which in vast flocks covered all the surrounding rocks, and even built on the sides of the houses. Many of these birds were so tame, that when the natives walked up to their nests, they were wont to step off, allow two or three eggs to be taken, and then resume their seat. The people were most strict in their attendance on religious duties, and carried their resignation to the will of Providence so very far, that they rejoiced and sometimes even held a festival at the death of near relations. The Italians, accustomed to the feelings of southern jealousy, were extremely surprised to see all the members of a family sleeping together in one apartment, which they themselves were admitted to share without the remotest feeling of impropriety. In summer, both sexes walked naked to the nearest pool, and bathed promiscuously, all in perfect innocence, and without awakening any suspicion,—a practice indeed which pretty generally prevails in the northern countries of Europe at the present day.

The summer having arrived, Quirini took occasion to go with the annual ship to Drontheim, and, travelling thence by land to Sweden, he found a vessel bound for Rostock, in which he finally returned to Italy by way of England.

CHAPTER IV.

Voyages in Search of a North-East Passage.

THE latter part of the fifteenth century may be fixed upon as that period in the history of the world when maritime discovery proceeded on the greatest scale, with the most splendid results, and the most extensive influence on the condition of mankind. Travellers and navigators of the present day have displayed an enterprise which nothing could exceed; but there remained for their efforts only the dark and distant boundaries of ocean, or the interior of barbarous continents. On the contrary, vast kingdoms, new worlds, regions teeming with unbounded wealth, rewarded the daring career of Gama and Columbus. A new direction was given to human ambition and industry; and the discovery of distant regions became not only a commercial speculation with individuals, but a grand object of national policy.

England, one of the most powerful kingdoms of Europe, had always shown herself ready to embark in every scheme of utility: yet she was not altogether ripe for these extensive undertakings. The nations of southern Europe were then nearly a century in advance of those ruder states which lay beyond the Alps and the Pyrenees. Venice, Genoa, Seville, Lisbon, not London or Amsterdam, were the great schools of commerce and navigation. The habits and ideas of the feudal system, its proud indolence and contempt of mechanical pursuits, were only in the course of being gradually superseded; and the mercantile interest possessed as yet only a small share of that pre-eminent importance to which it has since attained.

Henry VII., amid these unfavourable circumstances, and with nothing of the heroic or adventurous in his composition, possessed yet qualities which enabled him to appreciate the importance of maritime undertakings. Every thing which afforded any promise of filling his coffers was congenial to the taste of that monarch; and for this reason he showed himself ready to meet the aspiring views of Columbus with greater promptitude than any other monarch of the age. That great navigator, after vain solicitation at the courts of Spain and Portugal, sent his brother Bartholomew to make propositions to Henry, which were very readily accepted; but before his messenger returned to Spain, Columbus, under the auspices of Isabella, was already crossing the Atlantic. It was afterwards with the full sanction and favour of Henry, though not at his expense, that John Cabot made that important voyage, in which he discovered Newfoundland, an island which, though not fitted for culture, has become the well-known seat of the greatest fishery in the world. He was also the first European who came into contact with any part of the mainland of America. That prince afterwards granted to John Elliot and Thomas Ashurst of Bristol, with several natives of Portugal, letters patent, to undertake the discovery of lands and regions unknown; but the result of their expedition is not recorded.

Notwithstanding these proceedings, England had not yet thoroughly imbibed the true spirit of maritime enterprise. It had been kindled at a foreign shrine, and, when deprived of external support, gradually languished. This flame became nearly extinct during the long reign of Henry VIII. That prince, full of bustle, needy of money, and not devoid of intelligence, might have been supposed rather prompt to embark in such enterprises; but, involved in so many disputes, domestic and theological, and studying, though with little skill, to hold the balance between the two great continental rivals, Charles and Francis, he was insensible to the glory and advantages to be derived from maritime expeditions. Sebastian Cabot, the son of the navigator just named, in order to obtain employment, was obliged to quit England and repair to Spain, where he was received with much favour, and spent the greater part of his life, either in attempts at discovery, or in a quiet residence at Seville, where he was consulted and revered as a nautical oracle.

After a long slumber, the maritime genius of England was suddenly roused. It burst forth under a young prince of high hope and promise. In 1553, the sixth year of the reign of Edward VI., the merchants of London, among whom are said to have been "men of great wisdom and gravity," felt a sudden and extreme ardour in the cause of discovery. There chanced at that critical moment to be in London no less a person than the younger Cabot, who had aided his father in the discovery of

North America, and who, as already mentioned, had afterwards, while residing abroad, become an oracle in every thing connected with navigation. With him the merchants entered into deep consultation, and in conjunction with him formed the general plan of a voyage, having in view to reach, by way of the north and north-east, the opulent and celebrated regions of India and Cathay. The obstacles to such an undertaking could not yet be fully appreciated. No just idea could at that time be formed of the immense breadth of Asia, its extension towards the north, and the enormous masses of ice with which its shores are encumbered.

The youthful monarch, whether he had any influence in inspiring this general ardour, or whether he caught the flame from his people, showed certainly the most eager interest in the cause. He had already named Sebastian Cabot grand pilot of England, with a salary, considerable in that age, of L.166. It was not by royal munificence, however, that the funds were supplied for prosecuting this arduous enterprise. An association, or senate, as it is called, was formed, who judged it most advisable to divide the concern into shares of L.25, by which means the sum of six thousand pounds was easily raised, and employed in the construction and equipment of three vessels fitted for northern navigation. The preparations, with a due regard to the formidable character and length of the voyage, were made on a scale, of which there had been no previous example; Cabot says, "the like was never in any realm seen, used, or known." The timbers were made of extraordinary strength, by the best shipwrights; the keel was covered with thin sheets of lead, a contrivance then practised for the first time, and since found most important; provisions for eighteen months were put on board. Cabot, though unable, probably from his age, to accompany the expedition, drew out a series of instructions, in which the whole conduct to be observed by the officers and crew is minutely laid down. He enjoins strict attention to private conduct and morals; that morning and evening prayers be read on board each ship, either by the chaplain or master; that there be no "ribaldry or ungodly talk, dicing, carding, tabling, nor other devilish games." He prohibits all acts tending to the breach of discipline, "conspiracies, part-takings, factions, false tales, which be the very seeds and fruits of contention." Naval subordination being in that age only imperfectly established, and the tendency to mutiny extremely strong, these exhortations were most necessary and important. All questions respecting the steering of the ship were to be decided by a council of twelve, the captain having only a double vote. Persons skilled in writing were, in each ship, to keep a daily record of the course of navigation, the celestial observations, the aspect of the lands along which they sailed, with every other interesting occurrence. The masters of the different ships were to meet weekly, compare these records, and, after combining them with each other, enter them in a common ledger. Directions are even given for keeping weekly accounts, maintaining the cook-room and other parts of the ship clean, and preventing any liquor from being spilled upon them. The natives of the countries which they visited were "to be considered advisedly, and treated with gentleness and courtesy, without any disdain, laughing, or contempt." Particular endeavours were to be made by fair means to allure some one on board, where he was to be well clothed and treated, so as to allure others; but we cannot so much applaud the hint, that "if he be made drunk with your wine or beer, you shall know the secrets of his heart." The mariners are exhorted, however, to use the utmost circumspection in their dealings with these strangers, and if invited to dine with any lord or ruler, to go well armed, and in a posture of defence. The liveries furnished to the sailors were to be carefully kept by the mercantile agents, and to be worn only when their captain considered it an object to show them "in good array for the advancement and honour of the voyage." He warns the mariners not to be too much alarmed when they saw the natives dressed in lions' and bears' skins, with long bows and arrows, as this formidable appearance was often assumed merely to inspire terror. However, he seems to suggest a still more chimerical fear, when he tells them, that there are persons armed with bows, who swim naked, in various seas, havens, and rivers, "desirous of the bodies of men, which they covet for meat," and against whom diligent watch must be kept night and day. We know not whether some confused rumour of the shark and alligator had an influence in suggesting this strange precaution.

The question was now to elect a fitting commander, and many offers were made both by persons qualified and unqualified. The choice for the supreme direction fell finally on Sir Hugh Willoughby. His recommendations, as mentioned by Adams, were high birth, tall and handsome person, valiant conduct and skill in war,—merits probably enhanced by admiration of the heroism which impelled him to adventure himself in this new and daring career. No mention being made of nautical experience, it may be suspected that, amid so many brilliant qualities, this most essential requisite was not duly taken into account. The command of the next vessel was given to Richard Chancelor, an *élève* of Henry Sidney, father of Sir Philip, and who first gave lustre to that great name. Sidney stood high in the favour of the king, and was inspired with the most ardent zeal for the promotion of the voyage. Chancelor is specially commended for "the many good parts of wit in him," tending to inspire the most sanguine hopes of his success.

All preparations being thus completed, King Edward drew up a letter addressed to all "kings, princes, rulers, judges, and governors of the earth;" which, if composed by himself, certainly reflects very considerable credit upon his spirit and judgment. He observes to these unknown potentates, that "the great and Almighty God hath given unto mankind, above all other living creatures, such a heart and desire, that every man desireth to join friendship with other, to love and to be loved, also to give and receive mutual benefits." He represents, therefore, the duty of showing kindness to strangers, and especially to "merchants who wander about the world, search both the land and the sea, to carry such good and profitable things as are found in their countries to remote regions and kingdoms." With this view, it is stated that a valiant knight, Sir Hugh Willoughby, and other trusty and faithful servants, had departed from England. "We therefore desire you, kings and princes, and all other to whom there is any power on the earth, to permit unto these our servants free passage by your regions and dominions, for they shall not touch any thing of yours unwilling unto you." If such kindness were shown, he concludes,—"We promise by the God of all things that are contained in heaven, earth, and the sea, and by the life and tranquillity of our kingdoms, that we will with like humanity accept your servants, if at any time they shall come to our kingdoms."

It was judged inexpedient to delay the departure of the vessels beyond the 10th of May, lest they should be overtaken by winter in the northern latitudes. All the members of the expedition took a solemn and tender leave of their relations, kindred, and "friends dearer than kindred," and were at their station on the appointed day. The vessels early in the morning dropped down from Ratcliffe to Greenwich, where the court, and, as it were, the nation, were assembled to witness and hail their departure. The king himself was confined by illness, but the principal courtiers stood at the palace windows, the rest of the household mounted the towers, while the people in crowds lined the shore. The ships fired their guns, causing the hills and valleys to resound; and "the mariners shouted in such sort, that the sky rung with the noise thereof. In short, it was a very triumph." The thought of the distant and unknown seas, into which they were so perilously plunging, was either forgotten in this moment of exultation or served only to heighten its enthusiasm.

The expedition, after stopping a few days at Blackwall, sailed down to Woolwich and Gravesend, and thence to the coast of Essex, where contrary winds unfortunately detained them till the 23d. Then, with a favouring gale, they quitted England, and shaped their course into the open expanse of the German sea. The sailors, however, fixed their eyes on their native land as it gradually receded, and many, unaccustomed to these distant voyages, dropped a few natural tears at the thought that they saw it perhaps for the last time.

Sir Hugh was desirous of touching at the coast of Scotland, but this was rendered impossible by contrary winds, which obliged him also to make frequent changes of course, "traversing and tracing the seas." On the 14th July he found himself involved in that labyrinth of isles which stud the coast of Norway between the 66th and 68th degrees of latitude. The ships then stood eastward and out to sea, till they came to the larger range of the Lofoot (Loffoden) Isles. The people, subject to Denmark, were gentle and courteous; but the English, evidently ignorant of this coast, sought in vain to learn how these islands were situated with regard to the Norwegian shore. They proceeded onward to the large island of Seynam or Senjan, where they endeavoured without success to procure a pilot. They were now approaching the northern cape of Europe, and saw before them the abyss of the Arctic ocean stretching onwards to the Pole, and soon to be filled with snows and tempests. In this critical conjuncture, Sir Hugh assembled the commanders, and exhorted them to keep close together; but, in case of separation, appointed their rendezvous at Wardhuys, understood to be the principal port of Finmark. The wisdom of this precaution soon appeared. Before the English could enter a harbour, there arose such "flawes of wind and terrible whirlwinds," that they were obliged to stand out to the open sea, and allow the vessels to drift at the mercy of the waves. Amid the thick mists of the next stormy night the vessels of Willoughby and Chancelor separated, and never again met. Clement Adams, who was with Chancelor, says, that as they were driving before the gale, the admiral loudly and earnestly called upon them to keep close to him; but that he himself carried so much sail, and his vessel was so superior, that Chancelor could not possibly obey this order. Willoughby's pinnace was dashed to pieces amid the tempest; and next morning, when light dawned, he could see neither of his companions; but, discovering at length the smaller vessel called the Confidence, he continued his voyage. He now sailed nearly two hundred miles north-east and by north, but was astonished and bewildered at not discovering any symptom of land; whence it appeared that "the land lay not as the globe made mention." The imperfect maps of those days appear not to have shown that rapid southerly bend which the coast takes towards the great opening of the Waranger Fiord, on which Wardhuys is situated. Instead, therefore, of sailing along or toward the coast of Norway, he was plunging always deeper and deeper into the abysses of the northern ocean. At length the soundings, indicating a depth of 160 fathoms, proved the navigators to be far out at sea, involved in some great and perilous error. They then for some time took a direction to the south-east, yet afterwards again turned to the north, and continued shifting their courses amid doubt and uncertainty. Thus, as they groped their way through these vast and stormy seas, at length land appeared, but high, desolate, and covered with snow, while no sound could be wafted over the waves except the crash of its falling ice, and the hungry roar of its monsters. This coast was evidently that of Nova Zembla; but there was no point at which a landing could be made. After another attempt to push to the northward, the mariners became sensible that the coast of Norway was to be found only by an entire change of direction. They turned to the south-west, and having followed that course for a number of days saw the coast of Russian Lapland. Here they must have been very near the opening into the White Sea, into which had fortune guided their sails, they would have reached Archangel, have had a joyful meeting with their comrades, and spent the winter in comfort and security. An evil destiny led them westward, in the hope probably of reaching Wardhuys, the only point in those immense seas of which they had any distinct knowledge. The coast was naked, uninhabited, and destitute of shelter, except at one point, where they found a shore bold and rocky, but with one or two good harbours. Here, though it was only the middle of September, they felt already all the premature rigours of a northern season; intense frost, snow, and ice driving through the air, as though it had been the depth of winter. The officers conceived it therefore most expedient to search no longer along these desolate shores, but to take up their quarters in this haven till the ensuing spring. They were surprised by the appearances of Arctic zoology, reindeer, foxes, polar bears, and "divers beasts to them unknown, and therefore wonderful."

The narrative here closes, and the darkest gloom involves the fate of this first English expedition.

Neither the commander nor any of his brave companions ever returned to their native shores. After long suspense and anxiety, tidings reached England that some Russian sailors, as they wandered along these dreary boundaries, had been astonished by the view of two large ships, which they entered, and found the gallant crews all lifeless. There was only the journal of the voyage, with a note written in January, showing that at that date the crews were still alive. What was the immediate cause of a catastrophe so dismal and so complete, whether the extremity of cold, famine, or disease, or whether all these ills united at once assailed them, can now only be matter of sad conjecture. Thomson thus pathetically laments their fate:—

> Miserable they,
> Who, here entangled in the gathering ice,
> Take their last look of the descending sun;
> While, full of death, and fierce with tenfold frost,
> The long long night, incumbent o'er their heads,
> Falls horrible. Such was the Briton's fate,
> As with *first* prow (what have not Britons dared!)
> He for the passage sought, attempted since
> So much in vain.——

We must now follow the career of Chancelor, with whom we parted amid the tempest which overtook the ships at the extremity of Norway. This commander pressed on, and, by keeping close to the shore, or by obtaining better information, succeeded without any difficulty in reaching Wardhuys. There he waited for his companion seven days, after which, disregarding the alarming reports of perils which would beset his farther progress, he pushed on gallantly towards his mysterious destination. "He held on his course towards that unknown part of the world, and sailed so far, that he came at last to the place where he found no night at all, but a continual light and brightness of the sun, shining clearly upon the great and mighty sea." As this was August, it seems mysterious how the perpetual light of the northern midsummer should have been perceived for the first time, and have been ascribed to the progress eastward. Probably a course of gloomy weather had preceded and rendered it for the first time sensible. Thus, however, the adventurers were guided to the entrance of an immense bay, which was no other than the White Sea,—a grand feature yet unknown to Western Europe. They espied a little fishing-boat, the crew of which, having never seen a vessel of similar magnitude, were as much astonished as the native Americans had been at the Spaniards, and, taking the alarm, fled at full speed. Chancelor, with his party, pursued and overtook them; whereupon they fell flat on the ground, half-dead, crying for mercy. He immediately raised them most courteously, and by looks, gestures, and gifts, expressed the most kind intentions. Being then allowed to depart, they spread everywhere the report of the arrival "of a strange nation, of singular gentleness and courtesy." The natives came in crowds, and the sailors were copiously supplied with provisions and every thing they wanted.

Chancelor now, inquiring on what part of the world he had been thrown, learned that he was at the extremity of a vast country, then obscurely known to western Europe under the title of Russia or Muscovy, and which was under the absolute rule of a sovereign named Ivan Vasilovitch. Although the court at Moscow was immensely distant, and could only be reached by sledges over the snow, Chancelor immediately began to negotiate for permission to visit the capital of this great potentate; which he obtained after the delay of sending to Moscow. His journey to that city carrying him out of the sphere of Arctic discovery, it will suffice to say, that he was received in the most satisfactory manner, and returned with a letter from the Czar, expressing a cordial desire to open an intercourse with England, and to grant to the Company of Merchant-Adventurers every privilege necessary to enable them to carry on traffic in his kingdom. The traders now assumed the title of the Muscovy Company; and the same officer was again sent out with credentials from Philip and Mary, who, in consequence of the premature death of Edward, then filled the throne. The original object of an eastern passage was not lost sight of; the captain being instructed to make every possible inquiry on the subject. The spirit of discovery at home was too ardent, however, to wait his return. A small vessel, called the Search-thrift, was fitted out in 1556, and placed under the command of Stephen Burroughs, who, on the first voyage, had acted as master of Richard Chancelor's vessel. Enthusiasm and hope seem to have risen as high as at the departure of the first expedition. Sebastian Cabot came down to Gravesend with a large party of ladies and gentlemen, and, having first gone on board, and partaken of such cheer as the vessel afforded, invited Burroughs and his company to a splendid banquet at the sign of the Christopher. After dinner, a dance being proposed, the venerable pilot started up and tripped it along with the most youthful of the party.'

Under these cheerful auspices, Burroughs, on the 29th April, sailed from Gravesend. Various circumstances delayed till the middle of July his arrival at the islands and straits of Waygatz, between Nova Zembla and the continent. On the 21st the crew saw what they imagined to be land, but it proved to be " a monstrous heap of ice, which was a fearful sight to see." They were soon entangled in it, and for six hours could with difficulty avoid one mass without striking upon another. Soon after an immense whale came so close, that they might have thrust a sword into him ; but, alarmed lest he should overset the vessel, Burroughs called together his men, and caused them to shout with all their might; upon which this mighty animal, which is neither ferocious nor very courageous, plunged into the depths with a terrible noise.

Among the islands of Waygatz, the English descried a Russian sail. The master, named Loshak, stated himself to be in extreme haste ; but, on receiving a glass, two pewter spoons, and two knives, he presented seventeen wild geese, and gave much information. He stated this to be the country of the wild Samoiedes, who owned no subjection to Russia, but "will shoot at all men to the uttermost of their power that cannot speak their speech ;" it was even said that they ate the Russians. Loshak led the captain to a place left by these people, where there were still three hundred of their idols, the rudest workmanship Burroughs ever saw. They consisted of figures of men, women, and children, " very grossly wrought ; the eyes, mouths, and other parts, stained with blood." We may here mention that Joh[illegible]n, one of the party, when at the Pechora, had been present at a mighty scene of magic incantation, performed by one of the great northern wizards. This personage first took a great sieve, somewhat resembling a drum, then he began to sing " as we use in England to halloo, whoop, and shout at hounds," to which the company responded with—*igha, igha, igha!* At length the magician fell into convulsions, and dropped down as if dead, though he could still be heard breathing. Johnson, having asked the meaning of all this, was told—" Now doth our God tell him what we shall do!" Having thus allowed him to remain for a short time, the people began to cry *aghao, aghao!* whereupon he rose and again began to sing. He next took a sword and thrust it through his body, causing it to enter at the breast and issue at the back. Johnson saw it go into the shirt before and come out at the shirt behind, but does not seem to have scrutinized with any diligence its actual passage through the person. The sword, probably only of iron, had been heated, which would favour greatly a circuitous track. The magician then sat down with a vessel of hot water before him, and a line or rope of deer-skin passed round his body, over all which, as well as himself, a spacious cloth mantle was spread. The ends of the line, being left without the mantle, were drawn tight by two men on opposite sides, till something was heard falling into the dish. Johnson, asking what this was, learned with horror that it was the magician's head, shoulder, and left arm, severed from the body by the violent pulling of the rope. Johnson besought that he might be allowed to lift the cloak and view this awful spectacle, but was assured that no one could do so and live. After the multitude had sung and hallooed for some time, the cloak was lifted, when the wizard came forth perfectly entire, all the parts cut asunder having it seems been miraculously replaced. The imposture, however gross and obvious, appears to have completely succeeded with the ignorant natives.

Burroughs had passed fifteen leagues beyond the mouth of the Pechora, and the soundings indicated an approach to Nova Zembla, when he came to the conclusion, that all attempts to penetrate farther this year would be abortive. Among other causes, he mentions the untoward north and north-easterly winds, which were more powerful than in any other place he ever knew; the great and terrible abundance of ice, of which he had reason always to expect greater store; the nights waxing dark, and Winter with his storms beginning to draw on. Under these considerations he determined to return and winter at Colmogro, stating his intention to resume next summer his attempts to penetrate eastward; but this, in consequence of other employment, was never carried into effect.

There occurred now a tragical incident connected with northern discovery. The Czar, Ivan Vasilivitch, sent back with Richard Chancelor his ambassador and orator, as he is termed, Osep Nepea Gregorowitch, with four ships heavily laden with furs, wax, train-oil, and other Russian commodities, to the value of upwards of L.20,000, which belonged partly to the merchants and partly to the orator. On this homeward voyage, two of the vessels were wrecked on the coast of Norway, a third reached the Thames, but the Edward Bonaventure, in which were the chiefs of the expedition, was driven by the tempest into the bay of Pittisligo (Pitsligo), in the north of Scotland, where it went entirely to pieces. Chancelor endeavoured, in a very dark night, to convey himself and the ambassador ashore in a boat. The skiff was overwhelmed by the tempest, and the captain drowned, though the ambassador, by great good fortune, succeeded in reaching the land. He thence proceeded to London, where Philip and Mary gave him a splendid and pompous reception.

A disastrous character upon the whole was thus given to these voyages along the northern boundary of Europe and Asia. This would not probably have damped the high spirit of enterprise by which the British were then animated; but the Muscovy Company had their attention diverted by the project of opening a communication with Persia and India, across the Caspian, and by ascending the Oxus to Bochara. This scheme they prosecuted at great cost, and by a series of bold adventures, in which Jenkinson, Johnson, Alcocke, and other of their agents, penetrated deep into the interior regions of Asia. An unusual degree of courage was indeed necessary to undertake this expedition, which was to be begun by passing round the North Cape to the White Sea, then by a land-journey and voyage down the Volga, across the whole breadth of the Russian empire to Astrakhan, before they could even embark on the Caspian. The truth is, such a scheme was marked by the ignorance not less than by the boldness of early mercantile enterprise. It was soon ascertained, that no goods could bear the cost of such an immense and dangerous conveyance by sea and land; that the goods of India could be brought, and those of Europe returned, much cheaper and more commodiously, by the way of Aleppo and the

Mediterranean, than by this vast circuit round the stormy north. If the former conveyance, therefore, could not stand a competition with the water carriage by the Cape of Good Hope, how could the latter? It was abandoned, and no attempt for a long time was made to revive it.

This channel of intercourse with India having failed, the attention of commercial and nautical adventurers was again attracted to the possibility of effecting a passage by the north and east of Asia. Intelligence had just been received respecting the river Obi, which was reported to enter the ocean by seventy mouths, and which therefore seemed likely to communicate with the most important countries in the interior of Asia. John Balak, who had taken up his residence at Duisburg on the river Osella, wrote to Gerard Mercator, the famous cosmographer, a particular account of this river, and of the efforts made by Assenius, a native of the Netherlands, to penetrate eastward along the Asiatic coast. He mentions in particular another river called a tributary of the Obi, but which, from the details, appears rather to have been the Yenisei, down which came " great vessels laden with rich and precious merchandize, brought by black or swart people." In ascending this river, men came to the great lake of Kittay, (Baikal?) on whose banks were the Kara Kalmucs, who, he asserts, were the very people of Cathay. It was added, that on the shores of this lake had been heard sweet harmony of bells, and that stately and large buildings had been seen therein. Hence Mercator, in a letter to Hakluyt, infers that a very small progress beyond the limit already reached by navigators would carry them to the great eastern realms of Japan and China. He maintained that the cape bounding the Gulf of Obi was no other than the great promontory of Tabis, which, according to Pliny, formed the north-eastern boundary of Asia; which being turned, the fortunate navigator would bear down direct upon Serica, Cathay, Cambalu,—those regions with which ancient and modern rumour had identified the position of the Chinese empire. This was underrating the breadth of Asia by a hundred degrees of longitude, or more than a fourth of the circumference of the globe at this parallel; yet so imperfect were the sources of knowledge in those days, that the error, however immense, cannot be considered as fatal to the reputation of this great geographer.

To realize these views, Arthur Pet and Charles Jackman were supplied in 1580 with two vessels, the George and the William. On the 23d June they arrived at Wardhuys; from which they sailed on the 1st July. Approaching Nova Zembla they found themselves enclosed in a bay of ice, whence they were obliged to come out as they entered, and had much trouble before they were able to round the large field to which it belonged. On the 19th of July they saw Waygatz, and endeavoured to make their way along its southern coast; but found it so shallow that they were compelled to turn and make a circuit by the north. Passing onwards they came to a fair low island, and found a passage between the ice and the shore, which however at length closed, and they could advance no farther. At the same time the ships were separated by large fields of ice, and could communicate only by beating drums and firing muskets, till they were able to warp round and rejoin each other. They enjoyed now the most favourable breeze; but all was rendered vain by the state of the ice. "Winds we have had at will, but ice and fogs too much against our wills if it had pleased the Lord God otherwise." The captains determined to return to Waygatz, where they might confer together, and endeavour to find a more open passage. They were now obliged to warp from one piece of ice to another, some of them so large that they could not see beyond them from the topmast. They were repeatedly enclosed by these masses, enveloped with dark fogs, and obliged to make fast their vessel to icebergs, where, "abiding the Lord's leisure, they continued with patience." On the 13th August the vessels were involved among pieces of loose ice, one of which broke the stock of their anchor, "and many other great blows we had against the same, that it was marvellous the ship was able to abide them." The boat, being between the floe and the brig, was struck, its side driven in, and the vessel itself was made to recoil backward. Pet and Jackman did not reach Waygtaz till the 16th August, by which time, it being found impracticable to attempt penetrating again to the eastward, they sought only to repass the North Cape. They appear to have been zealous, well-intentioned men; but, not duly acquainted with the history of ice, they adhered too closely to the land, whence large masses are continually detached or carried down by the rivers, while the open sea might have afforded better hopes of a prosperous navigation.

The *United Provinces,* when roused to resistance by the furious bigotry of Philip, and by the cruelties of the remorseless Alva, after a long, hard, and glorious struggle, succeeded in establishing their little territory as an independent republic. Thenceforth they began to look to the sea as the source of their greatness and prosperity. This element surrounded and penetrated their country on all sides,—it towered, as it were, above them; and they had employed its inundations to defend their small domain against immensely superior forces. Commerce—a commerce embracing the globe—was necessary to compensate for the narrow limits within which they were hemmed, and to raise them to the first rank among the states of Europe. The East was the most promising quarter; but its approaches were strictly guarded, and they had not yet a fleet which could cope with the mighty armadas of Spain in the Atlantic and Indian seas. The North alone was open to their enterprise; and by passing its frozen boundaries, they hoped to arrive at the rich and celebrated empires whence so ample a tide of wealth had flowed into Europe.

The first expedition was undertaken by a private society of merchants, upon asking permission only of the States and of their high admiral, Prince Maurice. Three vessels, with a small yacht, were equipped at Amsterdam, Enchuysen, and Zealand. The pilot of the Amsterdam ship, to whose guidance the expedition was generally intrusted, was William Barentz, who approved himself as one of the most expert nautical men of the age.

The squadron sailed from the Texel on the 5th June 1594, and on the 23d arrived at the island of Kilduin in Muscovy. Approaching Nova Zembla it was formed into two divisions, one of which attempted to pass by the old route of the Strait of

Waygatz; but Barentz himself, taking a bolder course, endeavoured to pass round to the northward of Nova Zembla, that great insular mass which opposed, like a barrier, his eastward progress. Here he coasted the Bay of Loms, so called from the numerous flocks of the bird of that name, probably the penguin, with wings so small compared to its ample body, that it seemed astonishing how they could support the creature's motion in the air. Passing the Black Cape and William's Isle, the Dutch saw various features characteristic of the Arctic world; among others the walrus, in large herds, that huge amphibious animal called variously sea-horse or sea-cow, of which they give a very good description. Subsequently, at the Orange Isles, they came upon two or three hundred lying in heaps upon the sand, and basking in the sun. Having formed the erroneous idea that these animals are helpless on shore, the sailors marched against them as to an assured victory, congratulating themselves on the multitude of valuable teeth which would become an easy prize. So completely were they mistaken, that these gallant amphibia not only encountered, but beat them off with loss and dishonour, breaking in pieces the pikes, hatchets, and sabres employed in this fruitless assault. The crews sustained also the fierce encounter of the Polar bear. Having seen one on the shore they entered their shallop, and discharged several balls at him, but without inflicting any deadly wound. They were then happy when they succeeded in throwing a noose about his neck, hoping to lead him like a lapdog, and carry him as a trophy into Holland. They were not a little alarmed by his mighty and tremendous struggles; but what was their consternation, when he fastened his paws on the stern and entered the boat! The whole crew hastily clung to the poop, expecting instant death, either from the sea or from his jaws. Providentially at this moment the noose got entangled with the iron work of the rudder, and the creature struggled in vain to extricate himself. Seeing him thus fixed, they at length summoned courage to advance and despatch him with their spears.

Barentz, by the 1st August, reached the northern extremity of Nova Zembla, in lat. 77°; but the wind blew so strong, separating the ice into large flakes, that he and his crew, rather early it should seem, gave up hope and resolved to return.

The two other vessels meantime pushed on along the coast, and in due time arrived at Waygatz. This island had a very agreeable aspect, being covered with verdure and abundance of flowers, herbs, plants, and particularly a great store of leeks. Large trees were lying piled in heaps over each other, which appeared very surprising, when neither on this nor the opposite coast was there a single one found growing; but it was rightly judged that they were brought down the rivers of Tartary, and drifted hither by winds and currents. On turning a point the Dutch observed one of those great collections of rudely-carved images which had been formerly remarked by Burroughs. These consisted of men, women, and children, sometimes having from four to eight heads, all with their faces turned eastward, and many horns of rein-deer lying at their feet: it was called, therefore, the Cape of Idols. Forster alleges that the Samoiedes have been falsely charged with this idolatry, and that it were more charitable to conclude these to have been images of departed friends whom they cherished with pious veneration; but it does not very exactly appear how the Samoiedes should have had friends with six or eight faces.

The expedition had some difficulty in working their way through the Strait of Waygatz,—after passing which, and sailing for some space along the coast of Nova Zembla, they were repelled by the icy barriers; but having by perseverance rounded these, they arrived at a wide, blue, open sea, with the coast bending rapidly southward; and though this was only the shore of the Gulf of Obi, they doubted not that it was the eastern boundary of Asia, and would afford an easy passage down upon China. Instead, however, of prosecuting this voyage, they determined to hasten back and communicate to their countrymen this joyful intelligence. The two divisions met on the coast of Russian Lapland, and arrived in the Texel on the 16th September.

The intelligence conveyed in regard to the latter part of this expedition kindled the most sanguine hopes in the government and people of Holland. Prince Maurice and the States-General no longer confined themselves to empty praise and sanction, but supplied funds to aid in a fresh voyage. Six vessels were fitted out, not as for adventure and discovery, but as for assured success, and for carrying on an extensive traffic in the golden regions of the East. They were laden with merchandise, and well supplied with money; while a seventh, a light yacht, was instructed to follow them till they had passed Tabis, the supposed bounding promontory of Asia; when, having finally extricated themselves from the Polar ices, and directed their course to China, it was to return to Holland with the joyful tidings. Peter Plancius, the most celebrated cosmographer of that age, drew up a map for their guidance,—doubtless in our eyes a very crude performance, but which combined all the geographical lights of that ignorant period.

The armaments, which at that early epoch were set forth with the greatest pomp and the most ample equipment, usually issued in the most lame and abortive results. These large and heavily-laden vessels were peculiarly ill fitted for winding their way through narrow seas and channels encumbered with ice. Of all the northern expeditions, accordingly, none answered less than the present the great cost and magnificent expectations with which it had been equipped.

The squadron sailed from the Texel on the 2d of June, (1595,) a period of the season decidedly too late. Nothing great occurred till the 4th August, when they reached the strait between Waygatz and the continent, to which they had given the appellation of the Strait of Nassau. They came to the Cape of Idols; but though these were still drawn up in full array, no trace was found of the habitations which they might have seemed to indicate. A Russian vessel, however, constructed of pieces of bark sewed together, was met on its way from the Pechora to the Obi in search of the teeth of the sea-horse, whale-oil, and geese. The sailors accosted the Dutch in a very friendly manner, presented eight fat birds, and on going on board one of the vessels, were struck with astonishment at its magnitude, its equipments, and the high order with which every thing was arranged. This being a fast-day, they refused meat, butter, and cheese; but, on being offered a raw herring, eagerly swallowed it entire, head and tail inclusive.

The navigators, after considerable search, fell in with a party of Samoiedes, who are described as a people of small stature, broad and flat face, little eyes, short legs, and wrapt entirely in rein-deer skins, except a few who wore coloured cloth lined with fur. They manifested considerable jealousy of strangers, and on the approach of the interpreter, had drawn their arrows to shoot him; but he called aloud, "We are friends;" upon which they laid down their weapons, and saluted him in the Russian style, by bending their heads to the ground. The intercourse which followed was conducted on their part with considerable courtesy and good sense, mingled with a feeling of precaution and even alarm. On hearing a gun fired, they ran away and leapt like madmen, till assured that no harm was intended; and they were then amused by seeing a little stone placed on an eminence struck and shattered to pieces by a musket-ball. A sailor boldly went up to the chief, dignified in the narrative with the title of king, and presented him with some biscuit, which the monarch graciously accepted and ate, though looking round somewhat suspiciously. At length the parties took a friendly leave; but a native ran after the foreigners with signs of great anger, on account of one of their rude statues which a sailor had carried off. These figures were now judged to be divinities, and the bones found lying before them the remains of sacrifices offered to them in that capacity. The Dutch seem to have formed a still lower estimate than Burroughs of Samoiede sculpture. These images are described as little better than logs, somewhat rounded at the top to represent a head, with a slight projection for the nose, two little holes for eyes, and one larger aperture to represent the mouth.

The discoverers had been informed, in answer to diligent inquiries, that beyond a point which might be reached in about five days' sail, there extended a large open sea to the south-east. They made repeated attempts to reach this point; but, after emerging from the Strait of Waygatz, were always driven back by large bodies of floating ice. They persevered till the end of September, when these masses entered the Waygatz in such force that they were obliged with all speed to quit it by the western opening, and bend their sails towards Holland, without having accomplished any one of the brilliant objects for which this expedition had been undertaken.

A very considerable disappointment was felt in that country at the failure of an expedition, from which such sanguine hopes had been cherished. The States-General declined supplying funds for a fresh armament; but they proclaimed a reward to any individual or body of men by whom the object might be successfully accomplished. The town-council of Amsterdam, with great spirit, determined to fit out another squadron, on a smaller scale, and equipped only for discovery. They prepared two vessels, which were respectively intrusted, one to Barentz, and the other to John Corneliz Ryp, with seemingly an equal division of power. Suspecting apparently a prevalence of home-sickness, they admitted on board none but unmarried persons, who, it was hoped, would be animated with a bolder spirit of enterprise, and less inclined to long for return.

The vessels set sail, still rather too late, on the

10th of May, 1596. Their object seems to have been to avoid the coast of Russia and the Straits, to shun even Nova Zembla, and to push on direct through the wide expanse of the Northern Ocean. They even stood inadvertently somewhat to the west, and on the 22d came in view of the Shetland islands. Barentz urged that they should turn due east, in order to compensate this deviation; but Corneliz insisted that this would carry them at once into the Strait of Waygatz, the scene of so many abortive efforts, and insisted upon steering towards the north-north-east. After passing the Shetlands, they saw the most brilliant celestial phenomena they had ever witnessed. The sun was attended by two parhelia or mock suns, while a bright rainbow traversed all the three suns, and two other bows crossed the heavens in different quarters. On the 5th June some sailors called out, that a multitude of white swans were swimming in the water; but the more experienced gave warning that these swans would be found to be made of ice, and accordingly they were soon sailing in the midst of these moving masses. For two days they proceeded between them as between two lands; while the colour of the sea, which was green as grass, gave them the idea of being near the country called Greenland; but Scoresby has shown, as is elsewhere observed, that this colour is produced by the contents of the sea itself. On the 9th the adventurers discovered a long island rising abruptly into steep and lofty cliffs, the highest of which has borne the appropriate name of Mount Misery. Pennant, who erroneously supposes Bennet, in 1603, to have been the first discoverer, observes,—" The horror of this isle to the first discoverers must have been unspeakable: the prospect dreary; black where not hid with snow, and broken into a thousand precipices. No sounds but of the dashing of the waves, the crashing collision of floating ice, the discordant notes of myriads of sea-fowl, the yelping of Arctic foxes, the snorting of the walrusses, or the roaring of the Polar bears." The hills were so excessively steep, that though a party contrived to clamber up, they durst not look down, and the descent proved most doubtful and perilous. At length, applying their backs to the face of the steep, they slid down with safety, which Barentz, who looked up, could never have thought possible. From a bear, which the Dutch attacked, and vainly attempted to secure by a noose, they gave to it the name of Bear Island, which the English afterwards attempted to supplant by that of Alderman Cherie. Proceeding onward, still by too northerly a course, they reached the latitude of 80°, and discovered a coast which soon proved to belong to a country of great extent. This was Spitzbergen, or East Greenland, which, from the latitude, they probably approached near its northern point of Hakluyt's Headland. The name of Greenland, which has in some degree adhered to this island, was given under the erroneous impression of its belonging to that great extent of coast, so called by the Icelanders, in distinction from which it has been called East Greenland.

The Dutch, finding their progress eastward stopped by this line of coast, now retraced their route along its deep bays, still steering southward till they found themselves again at Bear Island. Here Corneliz and Barentz differed once more; the former still adhering to his original views, and recommending that they should again push northwards, and endeavour to find their way along the eastern coast of the newly-discovered land; but Barentz insisted more rationally, that they ought to steer east-south-east, and endeavour to round the northern point of Nova Zembla. Being unable to agree, and Barentz being resolved for this time not to yield, they determined to separate, and to make trial each of his respective course. Barentz, whom we follow, proceeded according to his plan, till at mid-day, on the 17th July, he found himself off the coast of Nova Zembla; he had gone too far south, and was obliged to turn again northwards. He pushed on as vigorously as possible, but it was not till the 6th August that he doubled Cape Nassau; but here finding the ice drifting along in large masses, and being involved in deep fogs, he judged it expedient to moor his vessel to a large iceberg. As the master was walking on deck, he saw a large bear endeavouring to scale the sides of the ship. He immediately called out, "All hands up!" and the crew having mustered, raised loud cries, which induced the monster to retreat; but he soon returned to the charge. They had now a sail raised along the deck, and four guns loaded, which were fired with such effect, that the bear fled, and sought shelter amid huge masses of ice.

On the 10th of August the ice began to separate, and the seamen remarked that the *berg* to which they were moored was fixed to the bottom, and that all the others struck against it. Afraid that these loose pieces would collect and enclose them, they quitted their moorings, and sailed on. The ice was already forming on the surface, and the ship in sailing through made it crack on all sides. The Dutch worked on their way, mooring themselves to successive fragments, one of which rose like a steeple, being twenty fathoms above and twelve beneath the water. They saw round them more than four hundred large icebergs, the fear of which made them keep close to the shore, not aware of that being the quarter where these dangerous bodies were formed, and along which they chiefly ranged. However, they steered on, and having passed what they called Little Icy Cape, came to Orange Island, which forms the northern extremity of Nova Zembla. Here ten men swam on shore, and, having mounted several piles of ice which rose, as it were, into a little mountain, they had the satisfaction of seeing the coast trending southward, and a wide open sea to the south-east. They hastened back to Barentz with these joyful tidings, and the success of the voyage was considered almost secure.

But these hopes were delusive. After doubling what was called Cape Desire (now Zelania), the icebergs mustered in such force, that the crews gave up all idea of doing more than reach the strait of Waygatz on their return home. They were driven, however, so rapidly before the floating masses, that three men, who had mounted one of them to reconnoitre, would have been left behind, but for extraordinary exertions of agility. They were now drawn direct into what they called Icy Port, and the vessel was thrown into a position almost perpendicular, with one end nearly touching the bottom. From this critical attitude they were relieved next day; but fresh masses of ice continually poured in, augmenting the terrible ramparts with which they were enclosed. One side of the vessel was raised by successive pieces jammed beneath it, but the other was similarly elevated; so that the ship was lifted to the top of the ice as by machinery. All this time the cracking, both around them, on every side, and within the ship itself, was so dreadful, that they were in continual fear of its parting into fragments; but this interior cracking, arising merely from the freezing of the juices of the timber, was much less dangerous than they imagined.

The Dutch now felt that they must bid adieu for this year to all hopes of escape from their icy prison. As the vessel was cracking continually, and opening in different quarters, they made no doubt of its going to pieces, and could hope to survive the winter only by constructing a hut, which might shelter them from the approaching rigour of the season. Parties sent into the country reported having seen footsteps of rein-deer, also a river of fresh water, and, what was more important still, a great quantity of fine trees, with the roots still attached to them, strewed upon the shore. Not one of these trees could have grown on the frozen soil of Nova Zembla; they were all brought down the rivers of Muscovy and Tartary, and wafted over the ocean by winds and currents. This circumstance gave a peculiarly cheerful colour to the hopes of the mariners. They trusted that Providence, which had in this surprising manner furnished materials to build a house, and fuel to warm it, would supply also whatever was necessary for their passing through the approaching winter, and for returning at length to their native country. A sledge was instantly constructed; three men cut the wood, while ten drew it to the spot marked out for the hut. They sought to raise a rampart of earth for shelter and security, and employed a long line of fire in the hope of softening the ground, but in vain.—The carpenter having died, it was found impossible to dig a grave for him, and they lodged his body in a cleft of the rock.

The building of the hut was carried on with ardour, as affording the only hope of life; yet the cold endured in this operation was intense, and almost insupportable. When a nail was put into the mouth, it was frozen to the lip, and brought the skin away, drawing blood. The snow sometimes fell so thick, for days successively, that the seamen could not stir from under cover. They had at the same time hard and perpetual combats with the Polar bear. One day the master saw from the ship three of these furious animals running towards the working party, and gave them warning by loud cries. They immediately ran towards the vessel; when one of them, in his haste, fell into a cleft in the ice, and was given up for lost; but the bears overlooked him, and continued their pursuit of the main body. The sailors having at length reached the ship, made the circuit of it, and mounted from behind; but their pursuers entered in front, and advanced furiously to the attack. A man, sent down to the kitchen to light a match, was in too great haste and agitation to accomplish that simple process, and the muskets were thus useless. The crew could now parry the assault only by throwing at the bears whatever came first to hand, by which the attention of the animals was always for a moment attracted, though they returned to the charge with fresh vigour. At length, when matters seemed approaching to extremity, a halberd was darted at the largest, which struck him on the mouth with such force that he retreated, and the others followed.

Notwithstanding this intense rigour, winter had not yet thoroughly set in. Several days of south-west wind dissolved a vast quantity of ice, and they saw a wide open sea without, while the vessel was enclosed within, as it were, by a solid wall. By October they completed their hut, and prepared to convey thither their provisions and stores. Some painful discoveries were now made. Several tuns of fine Dantzic beer, of an agreeable and medicinal quality, and from which they had anticipated much comfort, had frozen so hard as to break the casks, bursting even the iron hoops by which they were held. The contents, indeed, existed in the form of ice, but this, when thawed, had merely the taste of bad water; and though in the middle they found a liquor concentrating in itself the whole strength of the beer, it had not the true flavour and character of that beverage. They made trial of mixing the two together, but without being able to restore its proper relish and virtue.

The sun, which had hitherto been their only pleasure and consolation, began now to pay only short visits, and to give signs of his approaching departure. He rose in the south-south-east and set in the south-south-west, while the moon was scarcely dimmed by his presence. On the 1st November his full orb was still seen for a short interval; on the 2d it rested on the horizon, from which it did not detach itself; on the 4th the sky was calm and clear, but no sun rose or set.

The dreary winter night of three months, which d now set in, was not, however, without some alleviations. The moon, now at the full, wheeled her pale but perpetual circle round the horizon. With the sun disappeared also the bear, and in his room came the Arctic fox, a beautiful little creature, whose flesh resembled kid, and furnished a variety to their meals. They found great difficulty in the measurement of time, and on the 6th rose only late in the day, when a controversy ensued whether it was day or night. The cold had stopped the movements of all the clocks, but they afterwards formed a sand-glass of twelve hours, by which they contrived tolerably to estimate their time.

On the 3d December, as the sailors lay in bed, they heard from without a noise so tremendous as if all the mountains of ice by which they were surrounded had fallen in pieces over each other. In fact, the first light which they afterwards obtained showed a considerable extent of open sea; yet this disruption must have been produced by a merely internal movement of the ice, not by any tendency towards thaw.

As the season advanced, the cold became always more and more intense. Early in December a dense fall of snow stopped up all the passages by which the smoke could escape; so that a fire, at all fitted for the dreadful inclemency of the season, led to the danger of suffocation. The men were thus obliged to keep the room at a miserably low temperature, for which they used the imperfect remedy of heated stones, passed from one bed to another. One great trouble was how to wash their clothes; whenever they took these up from the boiling water, and began to wring them, the linen froze in their hands; and when they hung them up to dry, the side farthest from the fire was hard frozen.

The cold becoming always more rigorous, ice two inches thick was formed on the walls. At length their sufferings came to such an extremity, that, casting at each other languishing and piteous looks, they anticipated that this must end in the extinction of life. They now resolved that, cost what it might, they should for once be thoroughly warmed. They repaired, therefore, to the ship, whence they brought an ample supply of coal; and having kindled an immense fire, and carefully stopped up the windows and every aperture by which the cold could penetrate, they did bring themselves into a most comfortable temperature. In this delicious state, to which they had been so long strangers, they went to rest, and talked gaily for some time before falling asleep. Suddenly, in the middle of the night, several wakened in a state of the most painful vertigo; their cries roused the rest, and all found themselves more or less in the same alarming predicament. On attempting to rise, they became dizzy, and could neither stand nor walk. At length two or three contrived to stagger towards the door; but the first who opened it fell down insensible among the snow. De Veer, who stood behind, revived him by pouring vinegar on his face; and the wintry air, which had been their greatest dread, now restored life to the whole party.

These unhappy mariners being thus compelled to afford a certain access to the wintry blast, its effects became always more and more insupportable. It seemed as if the fire had lost all power of conveying heat; their clothes were white with snow and hoar-frost; their stockings were burned before the feet felt any warmth, and this burning was announced by smell rather than by feeling. Yet, in the very midst of these sufferings, remembering that the 5th January was the Feast of the Kings, they besought the master that they might be allowed to celebrate that great Dutch festival. They had saved a little wine and two pounds of flour, with which they fried pancakes in oil; the tickets were drawn, the gunner was crowned king of Nova Zembla, and the evening passed as merrily as if they had been at home round their native fireside. Nothing can more strikingly illustrate the salutary effects produced even in these desperate circumstances by mental occupation and amusement,—effects of which Captain Parry afterwards made so happy a use.

About the middle of January the crews began to experience some abatement of that deep darkness in which they had so long been involved. On throwing a bowl, they could see it run along the ground, which was before impossible. Soon after, about midday, a faint flush was seen to tinge the horizon; and this first dawn of the annual morning revived in their hearts the hope which was almost extinguished. On the 24th, De Veer and two others ran in to say, that they had seen a portion of the sun's disk. Barentz demonstrated, from the structure of the earth, that this could not take place for fifteen days. Many, however, trusted more to the eyes of their companions; and bets were taken, which could not be decided in the two following days in consequence of a heavy fog in which the air was involved. The 27th, however, being clear, they went out in a body, and saw, ascending above the horizon, the full orb of that great luminary. Joy took possession of their hearts, and Barentz in vain continued to prove, that this appearance was contrary to every principle of science. He was not aware of the extensive power of refraction in this northern air, which, in Captain Parry's expedition, produced a similar abridgment in the duration of the Polar winter.

Affairs now assumed a more cheerful aspect. Instead of constantly moping in the hut, the men went out daily, employed themselves in walking, running, and athletic games, which warmed their bodies and preserved their health. With the sun, however, appeared their old enemy the bear. One attacked them amid so thick a mist that they could not see to point their pieces, and sought shelter in the hut. The bear came to the door, and made the most desperate attempts to burst it open; but the master kept his back firmly set against it, and the animal at last retreated. Soon after he mounted the roof, where, having in vain attempted to enter by the chimney, he made furious attempts to pull it down, having torn the sail in which it was wrapped; all the while his frightful and hungry roarings spread dismay through the mansion beneath; at length he retreated. Another came so close to the man on guard, who was looking another way, that, on receiving the alarm from those within and looking about, he saw himself almost in the jaws of the bear; however, he had the presence of mind instantly to fire, when the animal was struck in the head, retreated, and was afterwards pursued and despatched.

The first reappearance of the sun had inspired hopes that the weather would become continually more mild and agreeable. It was, therefore, a severe disappointment, when, in February, a heavy north-east gale brought a cold more intense than ever, and buried the hut again under snow. This was the more deeply felt, as the men's strength and supply of generous food to recruit it were alike on the decline. They no longer attempted daily to clear a road, but those who were able went out and in by the chimney. *A dreadful calamity then overtook them in the* failure of their stock of wood for fuel. They began to gather all the fragments which had been thrown away, or lay scattered about the hut; but these being soon exhausted, it behoved them to carry out their sledge in search of more. To dig the trees, however, out of the deep snow, and drag them to the hut, was a task which, in their present exhausted state, would have appeared impossible, had they not felt that they must do it or perish.

In the course of March and April the weather became milder, and the attention of all the crew was drawn to plans and prospects of return. Southward, on the side of Tartary, the icy masses were still floating, but to the north-east there was an immense open sea. Yet the barriers which enclosed the ship not only continued, but, to their inexpressible grief, rapidly increased, probably from the fragments which floated in upon the breaking up of the great exterior mass. In the middle of March these ramparts were only 75 paces broad, in the beginning of May they were 500. These piles of ice resembled the houses of a great city, interspersed with apparent towers, steeples, and chimneys. The sailors, viewing with despair this position of the vessel, earnestly entreated permission to fit out the two boats, and in them to undertake the voyage homeward. The master at length agreed, provided there was no better prospect by the end of May. From the 20th to the 26th a north wind came on, and blew upon them a still greater quantity of ice; so that they no longer hesitated to begin their work, and to bring from the ship sails and cordage. The mere digging of the boats from under the snow was a most laborious task, and the equipment of them would have been next to impossible, but for the enthusiasm with which it was undertaken. By the 11th June they had the vessels fitted out, their clothes packed, and the provisions embarked. Then, however, they had to cut a way through the steeps and walls of ice which intervened between them and the open sea. Amid the extreme fatigue of digging, breaking, and cutting, they were kept in play by a huge bear which had come over the frozen sea from Tartary.

At length the crew having embarked all their clothes and provisions, set sail on the 14th with a westerly breeze. In the three following days they passed the Cape of Isles, Cape Desire, and came to Orange Isle, always working their way through much encumbering ice. As they were off Icy Cape, Barentz, long struggling with severe illness, and now feeling his end approach, desired himself to be lifted up that he might take a last view of that fatal and terrible boundary, on which he gazed for a considerable time.

On the following day the vessels were again involved amid masses of drift-ice, and were so forcibly struck, as well as squeezed between opposite fields, that the men had bid a final adieu to each other. Seeing, however, a body of fixed ice at a little distance, De Veer took a rope and leaped from fragment to fragment, till he arrived on the firm surface. A communication thus formed, they landed first the sick, then the stores and provisions, and, finally, they drew the boats themselves upon the ice.

During this detention, Barentz being informed of the severe illness of one Adrianson, said, that he himself was not far from his end. As he continued, however, conversing and looking on a chart of the voyage made by De Veer, it was thought that his disease could not be so serious, till he pushed aside the chart, asked for a draught of water, and immediately expired. This event extremely afflicted the crews, both from their personal attachment to Barentz, and the loss of his skill in piloting the vessels.

The sailors, with some drift-wood, repaired the boats; the ice, however, was still close around, and they were struck with the fear that they would never escape from this bank, but must perish upon it. On the 22d, however, there appeared open sea at a little distance, and having dragged the boats over successive pieces of ice, they were again afloat. In the three following days they reached Cape Nassau, the ice frequently stopping them, but opening again like the gates of a sluice and allowing a passage. On the 26th they were obliged once more to disembark and pitch their tents on the frozen surface. On the opposite coast they saw immense herds of sea-cows, (walrus,) and the air darkened with numberless birds. While they were fast asleep in the tent, the sentinel called out, "*Three bears! three bears!*" The whole crew were instantly out; their muskets were charged only with small shot for birds; however "these sweetmeats," though they could not inflict any serious wound, induced the monsters to turn, when one of them was pursued and killed. The dead bear was carried off in the mouth of one of the survivors to the most rugged parts of the ice, where the two devoured a large portion of his carcass.

The year was now advanced; the bright light of the sun and the occasional south-westerly breezes dissolved the ice, and gradually opened a way before them. It brought, however, dangers of a new class. The distinction between fixed and floating ice had now almost ceased, the former melting continually away. As they thought themselves lying secure on a large field, a body of icebergs came in from the open sea, struck and dashed it to pieces. The packages were separated from the boats, and several dropped into the water. It was laborious to scramble over the detached fragments to a place of safety, while the weighty articles sank into the softened ice, not without the greatest risk of falling to the bottom. For twelve hours the sailors floundered through this loose and broken surface before they could establish themselves on the field which was attached to the land.

The 2d of July was the finest day yet seen in Nova Zembla; and the weather continuing favourable, produced on the 7th an open sea, to which, with great labour, the men succeeded in dragging the boats. From this time their progress, though often obstructed, was never entirely stopped. In several of the rocky bays they caught an immense number of birds, these poor animals not having yet learned to fear man, and allowing themselves to be taken by the hand. Near Admiralty Bay they saw two hundred sea-cows lying on a bank of ice, and attacked them; but these powerful animals advanced to the combat, snorting and blowing in so tremendous a manner, that, had not a fresh wind sprung up, the mariners might have been in a serious predicament; and they repented bitterly, amid so many inevitable evils, to have brought on themselves one so very unnecessary.

On the 28th, after passing the bay of St Lawrence, when they approached to the southern extremity of Nova Zembla, the navigators discovered, with surprise and joy, two Russian vessels at anchor. They approached, and were received with the usual courtesy of that nation. Several of the Russians recollected having met them in the former voyage, and were truly astonished, instead of the large and handsome vessels whose equipment they had so much admired, to see them in these miserable open boats, with meagre and wasted frames. After mutual presents, the parties agreed to sail together to Waygatz, but were separated by a heavy gale. On a small isle the Dutch found abundance of *cochlearia*, or scurvy-grass, by the use of which the sick recovered in a manner almost miraculous. On the 3d August they steered their course to the south-south-west, and, though somewhat obstructed by ice, came on the 4th in view of the coast of Russia. They had a tedious but safe coasting voyage to Kola, where, to their joyful surprise, they found John Corneliz, who received them with the greatest kindness, and afforded them a comfortable passage to Amsterdam. As no account was ever given of this commander's own voyage, it may be presumed that it did not lead to any important discovery.

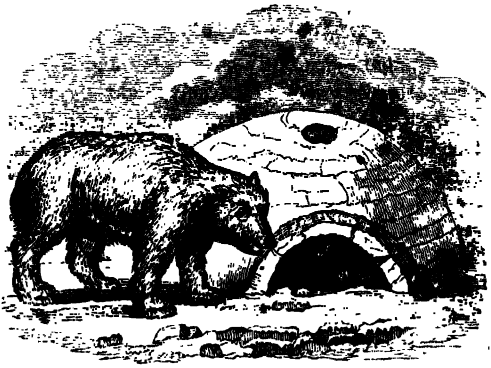
The question as to a north-eastern passage was not yet considered as finally determined. The London merchants next took it up, and, in 1608, fitted out Henry Hudson, who had already distinguished himself by a voyage to Spitzbergen, and proved one of the greatest of the early navigators. The design of Hudson appears to have been, not to entangle himself in the straits and islands on the Russian coast, but to strike direct into the channel between Nova Zembla and Spitzbergen. He dropped down to Blackwall on the 22d April, and on the 3d June saw the North Cape, bearing south-west. He still pushed on to the north and east, till he reached the latitude of 75 degrees, when he found himself entangled among ice. He at first endeavoured to push through, but, failing in this attempt, turned and extricated himself with only "a few rubs." On the 12th June he experienced a thick fog, and had his shrouds frozen; but the sky then cleared, and afforded bright sunshine for the whole day and night. On the 15th, Thomas Hilles and Robert Rayner solemnly averred, that, standing on deck, they had seen a mermaid. This marine maiden is described as having a female back and breast, a very white skin, and long black hair flowing behind; but on her turning round they descried a tail as of a porpoise, and speckled like a mackerel. It seems uncertain which of the cetaceous species suggested this fancied resemblance to the human form.

Hudson continued to push on eastward, varying, according to the wind, between the latitudes of 74° and 75°. On the 25th, however, heavy north and north-easterly gales, accompanied with fog and snow, obliged him to steer south-easterly; and this course, on the 26th, brought him to the coast of Nova Zembla, in lat. 72° 25′. Here, seemingly with premature resignation, when June was not yet closed, he concluded that it were fruitless to attempt to hold this year a more northerly course; in place of which he resolved to try the old and so often vainly-attempted route of the Waygatz. From this he was diverted by the view of a large sound, which appeared to afford an equally promising opening. On its shores also were numerous herds of morses, from which he hoped to defray the expense of the voyage. Nova Zembla, on the whole, seen under this Arctic midsummer, presented to him somewhat of a gay aspect. He says, it is " to man's eye a pleasant land; much mayne land, with no snow on it, looking in some places green, and deer feeding thereon." The sound, however, as might have been conjectured from the strong current which came down, terminated in a large river, and the boats soon came to anchorage in one fathom. The morses also, though seen in great numbers, could never be brought to close quarters. The ice now came in great masses from the south, " very fearful to look on;" and though, " by the mercy of God and his mighty help," Hudson escaped the danger, yet by the 6th of July he was " void of hope of a north-east passage;" and, determining to put his employers to no farther expense, hastened home to England.

We know not whether the Muscovy merchants had been fully satisfied with the zeal displayed by Hudson in this expedition; for we find him in 1609 setting sail from the Texel under the auspices of the Dutch East India Company, whose hopes of a northern passage had again revived. On the 5th May he passed the North Cape, and on the 19th came in view of Wardhuys. Hudson, though so excellent a navigator, is a most unsatisfactory writer. His narrative, amid vague complaints of fog and ice, shows only that he determined to turn his prow, and seek to repass the North Cape, whence he steered across the Atlantic to America. Forster says that he reached Nova Zembla, an assertion directly contrary to the captain's own narrative, and inconsistent with the time spent in this part of the voyage. According to Constantin, the crew, consisting chiefly of seamen accustomed to seek India by the tropical route, were soon alarmed by the fogs, tempests, and floating ice of the north. The truth is, Hudson's own mind seems to have been fixed on north-western discovery. This appears from several hints in his second narrative; and he was probably inclined to content himself with a mere show of proceeding eastward, that, apparently baffled, he might follow his favourite direction. He seems to have been impressed with the expectation of finding an open sea between Virginia and Newfoundland; and in fact he discovered the important bay which receives the river called after him, the Hudson, and on which New York has been since built;—but this lies out of our present sphere.

The Russia Company made afterwards some attempts to establish a factory on the Peehora; but, after persevering for two or three seasons, they relinquished this undertaking.

In 1676, Captain John Wood, on his own sanguine representations of the probability of a north-eastern passage, was sent out by the Admiralty in the Speedwell. On the farther coast of Nova Zembla, however, his vessel went to pieces, and the crew, cast on shore, with difficulty reached their companion, the Prosperous Pink, which afforded them a passage homeward. Wood, though he had done nothing to throw light on the question, brought home an impression respecting it so very gloomy, that the plan of penetrating to India in this direction was thenceforward given up, and has not been revived even in the eras of the most enthusiastic enterprise.



CHAPTER V.

Early Voyages towards the Pole.

The attention of the public, it has appeared, had been early drawn towards a Polar passage, which, by striking directly across the ice and tempests of that great boundary, might bring the navigator by a shorter route than any other to the golden realms of the East. Mr Robert Thorne, the zealous promoter of early discovery, in his memorials to Henry VIII. and other great men, placed always foremost the scheme of reaching India by this daring course. It was not wonderful, however, that such a voyage should not be the very first direction of modern enterprise. A century had elapsed from the discovery of the passage by the Cape of Good Hope, and half that period since the commencement of the naval career of Britain, before her seamen, despairing of success by the more circuitous eastern and western tracks hitherto followed, put forth all their strength, and attempted to penetrate this mighty northern barrier of the earth.

Barentz, in his third voyage, had discovered Spitzbergen, called at first New Land, and afterwards Greenland; but it was by fishing expeditions that English vessels were first attracted into the high latitudes of the Greenland or Polar sea. In 1603, Alderman Sir Francis Cherie of London fitted out the Godspeed, under the command of Stephen Bennet, seemingly with a vague scheme of pushing into the northern seas in search of whatever fortune might befall. Bennet began by the beaten track of the North Cape, Wardhuys, and Kola; from which last place, reversing his direction, he pushed north and north-west into the Arctic sea. On the 16th August, at two o'clock, he descried two hills which seemed to rise above the clouds. In four hours he reached the Bear Island of Barentz; and not aware, it should seem, of its previous discovery by that navigator, gave to it, from his own employer, the name of Cherie Island. Here the sailors caught only two foxes and a few fishes; for though they saw the teeth of a morse, proving that those animals did "use there," the season was judged too far advanced to commence operations against them. They returned by way of Kola and the North Cape, and reached the Thames on the 15th October.

Sir Francis, on the return of the ship, though it came empty, judged there was encouragement enough to send out next year the same vessel and commander. Bennet, accordingly, not only went out a second time, but made several successive voyages, in which the capture of the morse was carried on with considerable extent and success.

While these fishing voyages were going on, Henry Hudson, in 1607, was sent out by the Muscovy Company to penetrate, if possible, directly across the Pole. It was the first occasion of this very bold attempt, and the first recorded voyage of this eminent navigator. Hudson, who sailed on the 1st May, after having cleared Scotland, and passed the latitude of Iceland, took a direction westward, being desirous to survey the northern and unknown boundaries of Greenland, thinking there might be an open sea in that direction as likely as in any other. On the 13th June the ships were involved in thick fog, their shrouds and sails being frozen; but when it cleared next morning, the sailors descried a high and bold headland mostly covered with snow, behind which rose a castellated mountain, named the Mount of God's Mercy. Rain now fell, and the air felt temperate and agreeable. They steered eastward to clear this coast; but, after being for some time enveloped in fogs, again saw land, very high and bold, and without snow even on the top of the loftiest mountains To this cape, in 73°, they gave the name of Hold-with-Hope.

Hudson now took a north-eastward direction, and on the 27th faintly perceived, amid fogs and mist, the coast of Spitzbergen. He still pushed northward, till he passed the 79th degree of latitude, where he found the sun perpetually ten degrees above the horizon, yet the weather piercingly cold and the shrouds and sails often frozen. The ice obliged him to steer in various directions; but, embracing every opportunity, he pushed on, as appeared to him, to 81½°, and saw land still continuously stretching as far as 82°. But as the northern extremity of Spitzbergen does not lie beyond 81° of north latitude, he must here have committed some mistake, either in his latitudes or in mistaking for land extensive fields and masses of ice. It has been supposed that he had again reached the opposite coast of Greenland; but this seems inconsistent with his bearings, which are always more or less to the eastward. The latitudes of 81° and 82° he considers to be so completely barred with ice as certainly to defeat all attempts at a passage to the Pole in this direction. It appeared to him, however, that these seas might be frequented with great advantage on account of the immense multitude of seals with which they abound. He returned, coasting along Spitzbergen, some parts of which appeared very agreeable; and on the 15th September arrived in the Thames.

The Muscovy Company, still the most enterprising maritime body in England, determined yet to fit out another expedition for Polar discovery. They intrusted it to Jonas Poole, who had distinguished himself in the Cherie Island voyages; and it was hinted to him that though discovery was to be his main object, yet he might catch, at intervals, some morses, and even one or two whales, to make the voyage defray its own expenses. Poole took his departure in due season, sailing from Blackwall on the 1st March, 1610. By the 16th he had reached the coast of Norway, in lat. 65°; but the wind then blew from the north so "extreme fierce, with great store of snow and frost," and the vessel was so laden with ice, that it could not maintain a "fore course," but was driven back as far as Scotland. Here he remained till the 12th April, when, favoured by a southerly breeze, he again set sail, and, after many storms, snows, and extreme frosts, came in view, on the 2d May, of the North Cape. He then steered for Cherie Island, near which he judged himself to be on the 6th; but the fog was such that he could not see a cable's length, and "the ship had many a knock; but, thanks be to God, no harm was done." Continuing to beat about in this obscurity, he entirely missed Cherie Island, and the first land seen was in 76° 50′, being the shores of a sound on the coast of Spitzbergen, which, from the deers' horns found there, he named Horn Sound. He pushed on to 77° 25′, where he found the air more temperate than he had felt it at the North Cape at the same season. Soon, however, there was a complete reverse; the ship was involved in thick fogs,—and wind, frost, snow, and cold, seemed to strive for the mastery. After many a sore stroke he got the vessel through; but the mainsail was still "frozen as hard as ever he found any cloth," and could with great difficulty be set. He discovered an island, which he called Blackpoint, and the nearest promontory he named Cape Cold; but next day the weather changed so entirely that, had he fallen in with it then, he would have given it a gentler appellation; therefore he called another cape, Fair Foreland. Poole's views continued to brighten when he found that the sun, as the season advanced, gave a most powerful heat; that the ice was melted on the ponds and lakes, while that which still floated on the sea was not nearly so huge as he had seen it in 73 degrees. He conceived favourable hopes, therefore, even after so sharp a beginning, and judged that a passage by the Pole was as likely to be found in this as in any other unknown direction. He might therefore have been expected to apply himself in the most zealous and determined manner to seek the passage. A large herd of morses, however, having come in sight, he despatched his crew in pursuit of them; and from this time there is not another word of discovery,—but the taking of the walrus and the deer, and now and then the attack of the whale, absorb his whole attention. He met with some dangers. One day he attacked a herd of morses lying on ice, which proved hollow, and suddenly broke, whereon ice and beasts slid into the sea together, and the crew had great difficulty in not going along with them, especially one man; for, besides being crushed by the weight of dead morses and ice, the animals that were alive struck at him in the water and severely bruised him. Upon the whole, he judged Spitzbergen to be milder than Cherie Island, and was surprised at the great number of deer, and at the care of Providence, which enabled them to subsist with so little pasturage, with only the rocks for a house, the starry canopy for a covering, and not a bush or a tree to shelter them from the nipping cold of winter.

Although Poole returned from this voyage without having done or almost attempted anything, yet as he brought a considerable store of oil and morses' teeth, his employers were not ill satisfied. They fitted him out next year in the Elizabeth of 50 tons, and in their instructions distinctly informed him that discovery was to be his main object; yet intimated, that as he proceeded with the Mary Margaret, destined for the whale-fishery, he might begin with joining her in taking a whale or two, and in his course along the coast kill as many morses as might chance to present themselves. Having extracted the oil, he was to floor the hold with their skins, which a tanner had agreed to purchase of the company; but all this only to lighten the cost of discovery, and not to be in any degree a primary object.

The vessels set sail early in April, (1611,) but were soon separated by fogs and storms; and when Poole reached the coast of Spitzbergen, he found only three boats escaped from the wreck of the Mary Margaret. In the rest of his proceedings we never hear a single word of Polar discovery; but he applied himself most diligently to the secondary object; and by the 3d of August he had accumulated oil, morse skins, and teeth, to the extent of 29 tons,—a good lading, he observes, for a ship of 50. Accordingly it proved her ruin. As the last package was brought in she went entirely to one side, and all the morse skins, which lay loose in the hold, slipping in the same direction, carried her entirely under water. Poole, who sat in the cabin, considered himself as having only the selection of two deaths, either to be drowned by remaining, or, in attempting escape, to be killed by the casks, staves, and divers other things which were traversing the ship in every direction. He chose the latter alternative as the least certain, and though twice beaten down, was plucked from the jaws of death, being enabled to crawl out with only his skull laid open, his ears, back, and ribs severely bruised. The crew, who all escaped, were taken on board a Hull ship commanded by Thomas Marmaduke, of whom Poole makes many complaints, which Purchas, thinking too diffuse, has omitted. Of Greenland in general Poole observes, that when he went first, the mountains and plains were almost white with snow; afterwards they appeared green with grass and a little moss; but, lastly, the sun with his powerful heat dissolved the ice, and exhaled such a profusion of vapours, that the day there differed little from the darkest night elsewhere.

He was, nevertheless, sent out a third voyage in 1612 with two vessels, the Whale and the Seahorse; but he seems on this occasion also to have busied himself solely in the attack of whales, which he killed to the amount of thirteen. Nothing is mentioned of anything being either attempted or projected in relation to discovery; but he relates that Thomas Marmaduke penetrated to the latitude of 82°. No detail, however, is given, nor have we any narrative from Marmaduke himself; which is to be regretted, as he seems to have been more deeply imbued with the spirit of discovery than any other mariner of that time.

The next expedition was in 1613, under William Baffin, the most learned navigator of the age, and one of the greatest names in northern discovery. It was not, however, by this voyage that he obtained his reputation, though he was provided with six good and well-armed ships; the object seems to have been little else than to chase from the Greenland seas all other vessels that might attempt to use them for fishery. Their system was, whenever they fell in with a foreign vessel, to summon the master on board, show the king's commission granted to the worshipful company, and desire them to depart, on pain of having a cannonade immediately opened upon them. The strength of the English being in general decidedly superior to that of any other squadron that appeared in those seas, these terms were usually acceded to without any attempt at opposition. At one time, indeed, five vessels, Dutch, French, and a large one of 700 tons from Biscay, mustered, and showed signs of offering battle; but the Biscayner having lost courage and yielded, the rest were obliged to follow his example. Another Dutch ship having refused, and endeavoured to make off, so brisk a fire was opened upon her, that she had nearly run on shore, and was fain to submit. A considerable number of English sailors seem to have been on board these foreign ships, who were all, wherever they could be found, forcibly taken out. It seems difficult to discover on what ground the English founded their right to these coasts, since they had neither been the first discoverers, nor held them in any sort of occupation. In fact, they were not able ultimately to make good the pretensions assumed in so violent a manner.

There is no mention of any anxiety or efforts of Baffin for the purpose of discovery. On the contrary, Marmaduke, who had been again attempting to penetrate to the north of Spitzbergen, was chidden as having thereby hindered the voyage, and was prohibited from any farther attempts of the kind this season. The former, however, made some curious, and at that time novel, observations on the effects of refraction in high northern latitudes.

The Company still did not consider the question of a northern passage decided, as indeed since the time of Hudson, it could not be said to have been seriously attempted. In 1614 they appointed Robert Fotherby, in the Thomasine, to accompany their great Greenland fleet of ten ships and two pinnaces, and while the rest were busied in fishery to devote himself mainly to discovery. Baffin accompanied him as pilot. After considerable obstructions, eleven ships being at one time fast among the ice, the captain, by the 6th of June, pushed on to Hakluyt's Headland. He endeavoured to penetrate through Magdalena Bay, which he calls Maudlen Sound; but the weather was foul, and the ice lay unbroken from shore to shore. On the 10th, the weather permitting, he stood farther out, and succeeded in passing to the north of Hakluyt's Headland; but the ice now presented an impenetrable barrier. Fotherby then steered westward, in hopes of a more favourable opening; but the ice trending south-west, he sailed twenty-eight leagues without success, and then returned to the Foreland. About the middle of July, the air becoming clear and favourable, the commander and Baffin ascended a high hill, to see what prospect there was of getting forward; but, as far as they could discern, ice lay upon the sea, which indeed seemed wholly "bound with ice," though in the extreme distance there was an appearance of open water, which inspired some hope. After amusing themselves for some days with whale-killing, they again mounted a very high hill, whence they saw an extensive sound, but much pestered with ice. This was Sir Thomas Smith's Sound, which they afterwards ascended to its head, and found a good harbour, very advantageously situated for the whale-fishery.

It was now the 9th of August, and Fotherby saw two Dutch ships, that had been appointed for northern discovery, making their way southward; but he was determined not to be baffled without some farther struggle. He pushed to the northward from Cape Barren, and had made twenty-four leagues, when he met the ice. He coasted along it for two days, hoping for some adventure among its shattered fragments; but a north wind sprang up, with heavy snow, and everything being cold, thick, and winter-like, he was forced again into harbour. The shore and hill being now covered with snow, the men's minds became possessed with a desire of returning to England; but Fotherby was unwilling to depart without some farther satisfaction. He went in a boat up Redcliffe Sound, and though ice was newly formed upon it, of about the thickness of a half-crown piece, he pierced through, and got into open water. The snow, however, continued to fall thick, and the east wind forcibly blew in the ice, so that they were glad to return to the ship. Passing a point, it was observed that a cross which they had erected, with the King's arms and a sixpence nailed upon it, had been taken down, "sixpence and all," by the Dutch, and Prince Maurice's arms substituted; this, however, was speedily redressed.

About the end of August a gale sprang up from the south-west, and brought milder weather than at any former period of the season; and the strength of the thaw was proved, by the huge masses falling from the snowy banks into the sea with a noise like thunder. Conceiving better hopes, Fotherby pushed out again, in a north-west direction, till he came nearly to the latitude of 80°, when he heard a mighty noise of the waves, as it were, breaking on an extensive shore. It proved, however, that he was now on the margin of the great northern ice. He coasted for some time along that grand barrier; but was soon embayed, and with difficulty extricated. The season advancing, he took the benefit of a north wind to steer homewards, and on the 4th October arrived at Wapping, with his whole crew of twenty-six men in perfect health.

Fotherby, having recommended himself on this voyage byspirit and diligence, was sent out next year (1615) by the worshipful Company, in the Richard, a pinnace of only twenty tons. After many conflicts with ice and fog, he reached Hakluyt's Headland about the beginning of July. He soon began his career of discovery; but a strong southerly gale driving him upon the ice, shattered his bark considerably, and obliged him to return. As soon as his vessel was refitted, he endeavoured, by a westerly course, to find an opening among the ice, which projected in various points and capes, but remained still fixed, and he found himself pushed by it southwards to the latitude of 76°. We soon find him still farther west, on what he thought should have been the southern part of Hudson's Greenland; and sea-fowls in vast flocks seemed to indicate land, but the fog lay so thick, "that he might easier hear land than see it." However, about lat. 71½°, the air cleared, and he descried a snowy hill very high amid the clouds; and the fog lying on each side, made it appear like a great continent. It proved, however, to be only an island, probably Jan Mayen; and as the shores presented nothing but drift-wood, and appeared as if fortified with castles and bulwarks of rock, no shelter was afforded from a heavy gale which began to blow. This induced him to stand out again to sea. He regained the northern point of Spitzbergen, and began to beat for a Polar passage. The wind, however, blew so strong from the north-north-east, that he gave up the attempt, only resolving, on his way home, to take a survey of Hudson's Hold-with-Hope. He came to the place where it ought to have been, but finding no land, he insisted that Hudson must have been mistaken in the position assigned to it,—a suspicion which has been recently confirmed by Mr Scoresby. Availing himself then of a brisk northerly breeze, he sailed for England.

Fotherby, on being asked as to the prospects of a passage through these seas, replied, that though he had not attained in this respect his desire, nothing yet appeared to exclude hope. There was a spacious sea between Greenland and Spitzbergen, though much pestered with ice; and he would not dissuade the worshipful Company from a yearly adventure of L.150, or L.200 at the most; and the little pinnace, with ten men, in which he had sailed two thousand leagues, appeared to him more convenient for that purpose than any of larger dimensions. A very long period, however, elapsed before any attempt of this nature was resumed.

CHAPTER VI.

Early Voyages in Search of a North-West Passage.

NOTWITHSTANDING the early, repeated, and vigorous efforts to discover a passage by the east and north-east, the west was the quarter which finally drew forth the grandest series of naval enterprise, and flattered the nation longest with the hope of this signal discovery. The maritime world were yet very little aware of the immense breadth of America at its northern limit. That continent was long imagined to terminate in a cape, after rounding which, and passing through the strait of Anian,—an imaginary channel, supposed by the early geographers to separate America from Asia,—an entrance would be opened at once into the Pacific, and the navigator might proceed full sail to Japan, China, the Spice Islands, and all the regions abounding in Indian wealth.

Portugal, first of the European nations, had embarked in the career of ocean-discovery. Her monarchs and princes devoted their most anxious study and all the resources of their kingdom to double the southern point of Africa, and thereby to overcome the obstacles opposed by that continent to a direct commerce with India. Their efforts were crowned by the discovery of the passage by the Cape, through which the trade and treasures of the Eastern World became theirs. This would have been the most brilliant maritime enterprise ever performed, had it not been rivalled by the contemporaneous discovery of America. Enough might seem to have been done both for the benefit and the glory of Portugal, without directing the national resources into any other channel. Yet one of the most illustrious houses of that kingdom, with much enthusiasm and no small loss, devoted itself to western navigation. This house was that of Cortereal; for a member of which, John Vaz Cortereal, claims are advanced as having discovered Newfoundland, nearly a century before the celebrated voyages of Columbus or Cabot. In 1500, his son, Gaspar Cortereal, immediately upon the discovery of the Western World, resolved to follow in the steps of Columbus. Having obtained from the king two vessels, he touched at Terceira, one of the Azores, proceeded northwards, whence he endeavoured to find his way to India by some of the higher latitudes. Respecting the details of this voyage there remain only detached shreds, which Mr Barrow has collected with equal learning and diligence. His first attempt appears to have been made by the broad opening of the Gulf of St Lawrence, which he probably ascended, till, by the narrowing channel and the descending current, it was ascertained to terminate in a river, and to afford no hope of a passage round America. He then steered northwards, and passed along a coast which Europeans have since commonly called Labrador, but which in the early maps bears from him the name of *Cortercalis*. In some of the relations, this coast is called *Terra Verde*, (Greenland,) but it has nothing in common with the country to which Europeans have almost as improperly affixed that name. The territory is represented as amply stocked with timber, —a description which applies to the spacious forests of fir and pine that clothe the region immediately north of Canada. The natives are correctly described as of small stature,—a simple and laborious race;—and no less than fifty-seven being allured, or carried on board, were conveyed to Portugal. After a run along this coast, estimated at 800 miles, Cortereal came to a region which appeared to some as lying almost beneath the Pole, and similar to that formerly reached by Nicolo and Antonio Zeno. Ramusio more explicitly states the highest latitude attained as only 60°, which would place the vessels about the entrances into Hudson's Bay. But the season must now have been far advanced; and the approach of the Polar winter, the floating mountains of ice, the thick snows which filled the air,— all the gloomy characteristics of an Arctic winter,— must, to a crew accustomed only to navigate the warm and temperate seas, have appeared peculiarly terrible. It was judged absolutely necessary to return to Portugal. That this necessity, however, was considered to arise from the season only, and that no general panic was struck into the mind of this intrepid navigator, was sufficiently testified by his appearing on the sea next season with two vessels, which he guided directly to the most northerly point of the former voyage. Here he is described as entering a strait, Hudson's perhaps, or more probably Frobisher's; but at this critical point of the voyage the vessels were separated by a tempest, and probably by the floating ices with which these straits are infested. One of them succeeded in extricating itself, and searched for some time in vain for its lost consort; but that which had on board the gallant leader of the expedition returned no more, and no trace could ever be obtained of its fate.

When these gloomy tidings were conveyed to Portugal, Miguel Cortereal, a younger brother, animated with the most tender affection to Gaspar, and with a congenial spirit of enterprise, determined to depart in search of him. Early next spring, having equipped three vessels, he sailed on the 10th May 1502 from the port of Lisbon. On arriving at the numerous openings into Hudson's Bay, the captains adopted the plan of separating and each exploring a particular inlet. This, however in some respects promising, was an imprudent step; for nothing could have more conduced to mutual safety than to have kept close together, and aided each other in those dreadful exigencies to which this navigation is liable. It proved a fatal measure; two of the vessels indeed met and returned; but Miguel and his crew shared the fate of those whom they had gone to seek,—they returned not; and it was never known where or how they perished. The survivors reported at Lisbon this heavy aggravation of the former distress. Fraternal affection and daring courage seem to have throughout characterized this noble race. There was still a third brother, Vasco Eanes, who besought of the king permission to search for his lost kindred even amid the abysses of this vast ocean; but to this project a royal veto was absolutely interposed, the king declaring that it was too much to have lost in this cause two of his best and most faithful servants.

After a commencement so gloomy, and such gallant efforts made in vain, it does not appear that the project of a northern passage was ever revived in Portugal.

Spain, which had made the discovery of America, and from that success derived so much glory and wealth, might have been expected to take a peculiar interest in everything connected with its farther exploration. The fact however appears to be, that, revelling among the rich plains and glittering treasures of Mexico and Peru, she felt little attraction towards the bleak confines of the Northern Pole. Only one very early voyage is mentioned, that, namely, which was undertaken, in 1524, by Gomez, with the view of discovering a shorter passage to the Moluccas. He is said to have brought home a few of the natives; but no record is preserved either of the events which attended his enterprise or even of the coast on which he arrived. There remains of it, as has been observed, only a jest, and one so indifferent as not to be worth repeating. The chief exertions of Spain for a passage were made from Mexico along the north-west coast of America; but these we do not propose to include in the present narrative.

Britain now took up this train of discovery, and made it almost exclusively her own. Her efforts indeed were long in vain: the barriers of nature were too mighty, and America, stretching her boundaries into regions that lie beneath the perpetual sway of the northern tempest, afforded only a precarious and doubtful navigation. England, however, has since earned high glory in this career; she has formed in it some of her greatest naval commanders, has opened new channels for fishery, fixed the limits of the western continent, and explored the wide seas and large islands which range along its northern boundary.

The few attempts at northern discovery made in the reign of Henry VIII. were all in this direction. In 1527, that prince was so far wrought upon by the representations of Mr Robert Thorne of Bristol, as to fit out two handsome vessels, having on board "divers cunning men," for the purpose of seeking and describing strange regions. The chroniclers however, Hall and Grafton, who narrate this undertaking, have not vouchsafed any report upon the result,—a negligence deeply deplored by Hakluyt, who, by the most anxious inquiry, could only learn from Sir Martin Frobisher and Mr Richard Allen, that one of the ships was called Dominus Vobiscum, and that one of the cunning men was a canon of St Paul's. His name is unknown; but he was a great mathematician, and wealthy, and shared the voyage in person. Hakluyt was also informed, that the expedition had steered first to the north of Newfoundland, where one of the vessels, adventuring into a deep and dangerous gulf, was cast away; the other then moved southward, and having made observations on Cape Breton and other coasts, returned to England in October.

This undertaking was followed, nine years thereafter, by another set on foot by Mr Hore of London, a wealthy and enterprising individual, who easily induced thirty young gentlemen of family and fortune, some of whom were from the Inns of Court, to embark along with him. Hakluyt had here equally to lament the absence of written records; but he found out Mr Oliver Dawbeny, who sailed in one of the vessels; and having learned that a son of Sir William

Buts of Norfolk had been of the party, and was still alive, he rode two hundred miles for the purpose of conversing with that gentleman. From these sources he collected that this gay band of volunteers, mustered in military array at Gravesend, and having taken the sacrament, went on board. They had a long and tedious voyage, during which their buoyant spirits considerably flagged. At the end of two months they reached Cape Breton, then held as part of the West Indies. Thence, in fulfilment of their views, they endeavoured to shape a more northerly course. They reached Penguin Island, the same probably since called Birds' Island, abounding so remarkably in fowls as large as a goose, and even in bears, which made such tolerable food, that all their wants were supplied. Having proceeded to Newfoundland, Dawbeny one day called on his comrades to come and view a boat with the "natural people of the country," whom they had earnestly desired to see. A barge was fitted out to treat with them; but the savages, alarmed, fled precipitately, relinquishing the side of a bear which they had been roasting; and all attempts to overtake them were fruitless. This coast appears to have been singularly barren and desolate. Food, it was said, could be procured only by purloining from the nest of an osprey the fish collected for her young. It seems strange that they should have remained on such a shore; but famine soon rose to such a pitch as to drive them to a most frightful extremity. Several of them waylaid a companion, killed him, and deposited his flesh in a secret place, to which they repaired, and having roasted it in successive portions, eagerly fed upon it. An accident betrayed this dreadful secret. One of the company, walking with another, smelt the savour of broiled meat, and reproached his comrade with keeping a private hoard, while others were in such fearful want. They came to high words, when the guilty person said, "Well, if you will have it, it is a piece of ———'s flesh." This being reported with horror to the captain, he called together his crew, and solemnly representing to them the dreadful guilt they had incurred, obtained a promise to desist. The famine, however, becoming always more cruel, they were at length driven to a systematic mode of carrying on the same horrible course, and had arranged the casting of lots to decide whose life should be sacrificed to save the rest, when a French ship appeared in view. Finding it to be both in good order and well stored with provisions, the English scrupled not to attack and seize it, recommending the ejected crew to the ill-provided bark which they themselves had left. They made their way in all haste home, which they reached in the most squalid and miserable state. So changed was young Buts, that neither Sir William nor his mother could recognise him, till he displayed a secret mark which proved him to be their son. Meantime the Frenchmen arrived in their own country, and raised loud complaints against the cruel and unwarrantable manner in which the English had treated them. Henry, unable to deny the extreme hardship of their case, yet moved with pity towards his own subjects, whom he was unwilling to punish, liberally paid from his private purse the full extent of the loss.

From so slight a narrative, it were rash to form any very positive conclusion; yet we cannot help observing, that there is little appearance of the adventurers having gone out duly prepared for their hard and arduous undertaking, and little display of nautical skill, prudence, or good conduct, in the whole of the expedition.

After so disastrous a trial, the spirit of western discovery slumbered. The great zeal kindled in the succeeding reign of Edward VI. turned wholly to the eastward, producing the voyages of Sir Hugh Willoughby and others, which have been recorded in a former chapter. It was otherwise with the spirit of enterprise which revived under Queen Elizabeth. That princess, however, though abundantly inclined to favour whatever might contribute to the glory and interests of her kingdom, did not originate or prompt any of these schemes. Sir Humphrey Gilbert and Mr Richard Willis wrote treatises, where learned observations were combined with fanciful reasonings and erroneous reports, but *all calculated to influence the public mind in support* of such undertakings. The first voyage was planned and conducted by Martin Frobisher, an officer who afterwards distinguished himself by naval exploits in every quarter of the globe, but who earned his early fame by contending with the snows and tempests of the northern deep.[4] Frobisher, regarding the western passage as the only great thing still left undone in the world, solicited for fifteen years, in city and court, the means of equipping a small flotilla capable of accomplishing this important object. The mercantile bodies manifested a coldness very unlike the zeal displayed on former occasions; but some leading men at court were at last more propitious, and, through the favour of the Earl of Warwick, Frobisher was enabled, in the year 1576, to equip three vessels, respectively of 35, 30, and 10 tons. These little barks, or rather boats, seemed ill fitted for ploughing the Arctic deep; yet Mr Scoresby has observed, that such vessels are better calculated for threading their way through channels obstructed by ice, and even for withstanding somewhat rude shocks from it, than larger and more unwieldy fabrics.

Frobisher, on the 8th June, dropped down from Deptford to Greenwich, where the court then resided, and, in passing by the palace, fired a round in his best style. The queen looked from the windows, cheering and waving her hand, and Secretary Walsingham came on board the vessels, wished them success, and exhorted the crews to good order and obedience. On the 12th the expedition passed Tilbury Hope, and having on the 19th reached Yarmouth, stood thence out to sea. On the 26th Frobisher saw before him Swinborne (Sumburgh) Head, the bold southern promontory of Shetland, while he had Fair Isle to the north-west. In the ocean-navigation which followed, he has only recorded his distances, latitudes, and directions. On the 11th July he saw a range of awful and precipitous summits, which, even in the height of summer, were all white with snow. He concluded this coast to be the Friesland of Zeno, but in fact it was the southern point of Greenland near Cape Farewell. A boat put out towards the coast, but found it so barred with ice and obscured by fog, that it was impossible to land. The navigators now steered westward, suffering severely from northerly gales. On the 14th the wind shattered their fore-yard, and bore the mizenmast overboard; and on the 16th the topmast with its sail broke off, and fell into the sea. They continued to press on; and upon the 22d a thick mist dispersing, showed a long range of coast, judged to be Labrador. Ice, however, formed an impassable barrier between them and the land, while the line went down 100 fathoms without touching ground. The current was very strong, but, from the impossibility of coming to anchor, could not be measured; yet it seemed not less than a league and a half an hour. On the 1st August the discoverers approached to make observations on a large island of ice, which, as they were viewing it, went to pieces, and fell into the sea with a tremendous crash.

On the 18th they reached a more accessible coast, and became desirous to ascertain if it was inhabited. Seeing seven boats plying along the beach, they sent out one of their own, the crew of which, by holding up a white cloth, induced a native canoe to approach; but, on seeing the ship, the people immediately turned back. Frobisher then went on shore, and, by the distribution of several little presents, enticed one of them to come on board. This person being well treated with meat and drink, made on his return so favourable a report, that nineteen followed his example. The sailors had then a full opportunity of observing this Esquimaux race. They are described as "like to Tartars, with long black hair, broad faces, and flat noses, having boats of seal-skin, with a keel of wood within the skin." Next day they appeared more shy, and with some difficulty one of them, by the allurement of a bell, was drawn on board. Frobisher, having no intention to detain him, sent a boat with five men to put him on shore at the angle of a rock; but these, urged by curiosity and blinded by false confidence, went on to join the main body of the natives—a fatal step; they were never allowed to return. Frobisher spent two days firing guns, and making inquiries at every point, but without success.

On the 26th August, without any very particular reason assigned, our navigator weighed for home; when passing by Greenland and Iceland, and coming in view of Orkney, the Texel, and Yarmouth, he reached Harwich in the beginning of October.

Frobisher had made little progress towards a western passage; yet, having with such slender means penetrated thus far, and discovered a new country, dignified with the title of Meta Incognita, his voyage was considered highly creditable, and as affording good promise for the future. The public interest was excited by another circumstance of a very illusory nature. All his friends importuned him to give them something or other which had come from Meta Incognita. At a loss to satisfy this avidity, he cast his eyes on a large stone which, from its glittering appearance, he had been induced to take on board. He broke it into pieces, and distributed them among the circle of his acquaintances. One portion was received by a lady, who happened to drop it into the fire, where, after burning for some time, it appeared to glitter like gold. Being thereupon carried before the goldsmiths, they were so ignorant, or so misled by the enthusiasm of the age, as to pronounce it a valuable ore of the most precious of metals. This false decision threw all England into a ferment of joy. There was no difficulty now in equipping an expedition.

The queen contributed the ship Ayde of 180 tons, besides means for enabling Frobisher to fit out two other vessels, the Michael and Gabriel, of 30 tons each. Being invited to visit the queen at Lord Warwick's seat in Essex, he received her majesty's hand to kiss, with many gracious expressions.

Frobisher sailed on the 26th May 1577, with such a "merrie wind," that on the 8th June he touched at the Orkneys for fresh water, allowing his gentlemen and soldiers to go on shore for recreation. The poor inhabitants, having, it is probable, suffered from the inroads of pirates, fled from their houses with cries and shrieks, but were soon, by courteous treatment, induced to return. Their accommodations were found truly miserable; they had no vent for smoke, but a fire in the middle of the house, on one side of which dwelt the family and on the other the cattle, —oatcakes and ewe-milk their only food. The English now entered on their perilous voyage through the northern ocean, during which they were much cheered with the perpetual light, which allowed them at all hours to read or otherwise amuse themselves; which is observed to be peculiarly cheering to such as "wander in unknown seas and long navigations, where both the winds and raging surges do pass their common course." They were surprised to see large fir-trees, torn up by the roots, floating in the midst of the ocean. On the 4th July Friesland presented its awful front, consisting of a range of inaccessible mountains entirely covered with snow, unless where, from the extreme steepness of the cliffs, it had broken off and fallen into the sea. During four days' sail they saw, whenever the thick fogs for a moment dispersed, a similarly dreary coast, without any landing-place, and without a sign of human habitation or even of life; yet little birds, apparently bewildered amid the mist, came and alighted on board, and gave the impression that there might be a milder region in the interior. But the inexperienced part of the crew were especially struck by the islands of ice, rising thirty or forty fathoms above the water, and rooted at the bottom of seas which the line could not fathom.

Frobisher now sailed across to Labrador, and touched at a sound which received his name. The coast, however, was found guarded by a mighty wall of ice, which the ships could not penetrate; but the captain, with two of his boats, worked his way into the strait, and began to survey the country and people. So crude were then the ideas respecting the geography of these regions, that they imagined the coast on their left to be America, and that on their right Asia. Landing on the American side they scrambled to the top of a hill, and erected a column, which, after the great patron of the expedition, was called Mount Warwick. On their return cries were heard like the lowing of bulls, and a large body of natives ran up to them in a very gay and cordial manner. They began an eager traffic for the trifling ornaments displayed by their visitors, yet declined every invitation to go on board, while the English on their part did not choose to accede to their overtures of going into the country. Frobisher and a companion meeting two of the natives apart, rashly seized and began dragging them to the boats, hoping there to gain their friendship by presents and courtesy. On the slippery ground, however, their feet gave way, the Esquimaux broke loose, and found behind a rock their bows and arrows, which they began to discharge with great fury. Frobisher and his comrade, seized with a panic scarcely justified by two such miserable assailants, fled full speed, and the captain reached the boat with an arrow sticking in his leg. The crew, imagining that something truly serious must have driven back their commander in such discomfiture, gave the alarm, and ran to the rescue. The two barbarians instantly fled; but Nicholas Conger, a stout fellow, servant to Lord Warwick, seized one of them and dragged him into the boat.

Meantime the ships outside were involved in a dreadful tempest, being tossed amid those tremendous ice-islands, the least of which would have been sufficient to have crushed them into a thousand pieces. To avoid dangers which so closely beset them, they were obliged to tack fourteen times in four hours; but with the benefit of the perpetual light, the skill of their steersman, and the aid of Providence, they weathered the tempest, without the necessity of driving out to sea and abandoning the boats. On the 19th, Frobisher came out with a large store of glittering stone; upon which, says Dionise Little, "we were all rapt with joy, forgetting both where we were and what we had suffered. Behold," says he, "the glory of man,—to-night looking for death, to-morrow devising how to satisfy his greedy appetite with gold."

A north-west gale now sprang up; before which, like magic, the mighty barriers of ice by which the ships had been shut out, melted away. They had now a broad and open passage by which they entered the Sound, which, in the conception of the English, was a strait leading into the Pacific Ocean. In a run of upwards of thirty leagues they landed at different points, and, mounting to the tops of hills, took possession of the country, with solemn and sacred ceremonies, in name of her majesty. Having found in one place a bridle of singular construction, they examined their captive upon it, who thereupon seized a dog, attached the bridle, yoked the animal in a sledge, and exhibited the Esquimaux mode of driving. This person admitted knowledge respecting the five men captured in the preceding year, but repelled most strenuously the signs by which the English intimated their belief that they had been killed and eaten. However, a dark source of suspicion was soon opened; for some boats of the natives were found, which, along with bones of dogs, flesh of unknown animals, and other strange things, contained an English canvass doublet, a shirt, a girdle, three shoes for contrary feet,—apparel which, beyond all doubt, belonged to their countrymen lost in the preceding year. Anxiously hoping to recover them, they left a letter in the boat, and pen, ink, and paper, with which to return an answer. Still more vigorous measures were determined upon to recover or avenge them. A party of forty, under Charles Jackman, marched inland to take the natives in the rear, and drive them upon the coast, where Frobisher with his boats waited to intercept them. The wretches had removed their tents into the interior; but the invaders, after marching over several mountains, descried another cluster of huts, supposed at first to belong to a different party; but the agitation and alarm visible the instant they were observed, showed that this was the guilty band. The Esquimaux, hastening to their canoes, pushed out full speed to sea; and they rowed with a rapidity which would have baffled all pursuit, had not Frobisher with his boats held the entrance of the Sound, and there awaited them. As soon as they saw themselves thus beset, they landed among the rocks, abandoning their skiffs, which they hoped to render useless by breaking the oars. The English rushed on with alacrity to the assault; but the natives, stationed on the rocks, resisted the landing, and stood their ground with the most savage and desperate valour. Overwhelmed with clouds of arrows, they picked them up, plucking them even out of their bodies, and returned them with fury. On feeling themselves mortally wounded, they plunged from the rocks into the sea, lest they should fall into the hands of the conquerors. At length, completely worsted, and having lost five or six of their number, they sprang up among the cliffs and eluded pursuit. There fell into the hands of the assailants only two females, who caused some speculation. One was stricken in years, and presented a visage so singularly hideous as suggested to many no less a suspipicion than that the great enemy of mankind stood before them in person. This impression gaining ground, it was resolved to apply a test then considered infallible. Her buskins were plucked off, to ascertain if she presented that peculiar structure of the lower extremities supposed to characterize the dread foe of the human race. As this essential character was found wanting, it was merely determined, by liberating her, to deliver their eyes from so distressing a spectacle. The other female was young, with a child in her arms; and being, from her peculiar costume, mistaken for a man, had been fired at and the child wounded. It was in vain to apply remedies; she licked off with her tongue the dressings and salves, and cured it in her own way. She and the male captive formerly taken looked strange at first, but, on becoming intimate, found much comfort in each other's society, and showed a strong mutual attachment.

Frobisher still cherished hopes of recovering his men. A large party appearing on the top of a hill, signs were made of a desire for mutual accommodation. A few of them advanced, and were introduced to the captives. The parties were deeply affected, and spent some time without uttering a word; tears then flowed; and when they at last found speech, it was in tones of tenderness and regret, which prepossessed the English much in their favour. Frobisher now came forward, and propounded, that, on condition of restoring his five men, they should receive back their own captives, with the addition of sundry of those little gifts and presents on which they set the highest value. This they promised, and also to convey a letter to the prisoners. Doubtless by this time the captives lived no longer, and the natives had no means of amicably redeeming their pledge; but they determined, by force or stratagem, to effect their purpose. Three men appeared holding up flags of bladder, inviting the invaders to approach; but the latter, who saw the heads of others peeping from behind the rocks, resolved to proceed with the utmost caution. The natives began by placing in view large pieces of excellent meat; and when their enemy could not be caught by that bait, a man advanced very close, feigning lameness, and seeming to offer himself an easy prey. Frobisher allowed a shot to be fired, by which the person was cured at once, and took to his heels. Seeing all their artifices fail, the barbarians determined upon main force, and pouring down to the number of a hundred, discharged their arrows with the utmost fury. They even followed a considerable way along the coast, regardless of the English shot; but the vessels meanwhile were too distant from the shore to suffer the slightest annoyance. Several of the seamen importuned Frobisher to allow them to land and attack; but this he refused, as only calculated to divert them from the main object, and to cause useless bloodshed.

The 21st of August had now arrived, the ice was beginning to form around the ships, and, though little progress had been made towards China, the seamen had put on board two hundred tons of the precious ore. They therefore mounted the highest hill, fired a volley in honour of the Countess of Warwick, and made their way home.

Notwithstanding the vicissitudes which had marked this voyage, its arrival was hailed with the utmost exultation. Enthusiasm and hope, both with the queen and the nation, rose higher than ever. The delusion of the golden ore continued in full force, and caused those desolate shores to be regarded as another Peru. Special commissioners, men of judgment, art, and skill, were named by her majesty to ascertain both the quality of the ore and the prospects of the voyage to India. After due inquiry, a most favourable report was made on both subjects, and it was recommended not only that a new expedition on a great scale should be fitted out, but a colony established on that remote coast, who might at once be placed in full possession of its treasures, and be on the watch for every opportunity of farther discovery. To brave the winter of the Polar world was a novel and daring enterprise; yet such was then the national spirit, that the appointed number of a hundred was quickly filled up. There were forty mariners, thirty miners, and thirty soldiers, in which last number were oddly included not only gentlemen, but goldfiners, bakers, and carpenters. Materials were sent on board the vessels which, on being put together, might be converted into a fort or house. The squadron fitted out was the largest that had yet adventured to plough the northern deep. It consisted of fifteen vessels, furnished by various ports, especially by those of the west, and the rendezvous took place at Harwich on the 27th May 1578, whence they sailed on the 31st. The captains waited on the queen at Greenwich, and were personally addressed by her in the most gracious manner; Frobisher receiving a chain of gold, and the honour of kissing her majesty's hand.

Occasion was formerly taken to observe, that expeditions got up on the greatest scale, and with the most ample means, usually proved the most unfortunate. A large and encumbered fleet was ill calculated to steer through the ice-entangled straits, and amid the mighty mountains which were floating over the northern deep. On reaching the Queen's Foreland, at the opening of Frobisher's Strait, the navigators found it frozen over from side to side, and barred as it were with successive walls, mountains, and bulwarks. A strong easterly wind had driven numerous icebergs upon the coast, and hence the navigation amid these huge moving bodies soon became most perilous. The Dennis, a large vessel, on board of which was part of the projected house, received such a tremendous blow from a mountain of ice, that it went down instantly, though the other ship, hastening to its aid, succeeded in saving the men. This spectacle struck panic into the other crews, who felt that the same fate might next moment be their own. The danger was much augmented when the gale increased to a tempest, and the icy masses, tossing in every direction, struck furiously against the sides of the vessels. Invention was now variously at work to find means of safety. Some moored themselves to these floating islands, and being carried about along with them, escaped the outrageous blows which they must otherwise have encountered. Others held suspended by the sides of the ship, oars, planks, pikes, poles, every thing by which the violence of the shocks might be broken ; yet the ice, " aided by the surging of the sea and billow," was seen to break in pieces planks three inches thick. Frobisher considers it as redounding highly to the glory of his poor miners and landsmen, wholly unused to such a scene, that they faced with heroism the assembled dangers that besieged them round. " At length it pleased God with his eyes of mercy to look down from heaven,"—a brisk south-west wind dispersed the ice, and gave them an open sea through which to navigate.

After a few days spent in repairing the vessels, and stopping up the leaks, Frobisher bent afresh all his efforts to penetrate inward to the spot where he was to found his colony. After considerable effort, he made his way into the strait, when he discovered that he was sailing between two coasts; but amid the gloomy mists, and the thick snow which fell in this northern midsummer, nothing could be distinctly seen. As, however, clear intervals occasionally occurred, affording partial glimpses of the land, the surmise arose, that this was not the shore along which they had formerly sailed. Frobisher would not listen to a suggestion which would have convicted him of having thrown away much of his time and labour. He still pressed onwards. Once the mariners imagined they saw Mount Warwick, but were soon undeceived. At length Christopher Hall, chief pilot, stood up and declared, in hearing of all the crew, that he never saw this coast before. Frobisher still persevered, sailing along a country more populous, more verdant, and better stocked with birds, than the one formerly visited. In fact, this was probably the main entrance into Hudson's Bay, by continuing in which he would have made the most important discoveries. But all his ideas of mineral wealth and successful passage were associated with the old strait; and, on being obliged to own that this was a different one, he turned back to the open sea. In this retreat the fleet was so involved in fogs and violent currents, and so beset with rocks and islands, that the sailors considered it only by a special interposition of Providence that they were brought out in safety. When they had reached the open sea, and arrived at the mouth of the desired strait, it was almost as difficult to find an entrance. However, Frobisher was constantly on the watch, and wherever there appeared any opening, it is said "he got in at one gap and out at another," till at length he reached his purposed haven in the depths of the north. Before, however, the crews were completely landed and established, the 9th of August had come, thick snows were falling, and it behoved them to hold a solemn consultation as to the prospects of the projected colony. There remained of the house only the materials of the south and east sides; the rest had either gone down in the Dennis, or had been shattered into fragments while suspended from the sides of the ships to meet the strokes of the ice. Great part of the bread had been spoiled, and the liquors had sustained a woful leakage; in short there was no adequate provision for a hundred men during a whole year. Captain Fenton of the Judith indeed suggested, that what remained of the house might be formed into a hut for sixty men, with whom he undertook to brave the northern winter; but the carpenters being consulted, declared that such a structure could not be erected in less than two months, while their utmost possible stay would be twenty-six days. Renouncing the idea of settlement, Frobisher still asked his captains whether they might not, during the short remaining interval, attempt some discovery to throw a redeeming lustre on this luckless voyage; but, in reply, they urged the advanced season, the symptoms of winter already approaching, and the danger of being enclosed in these narrow inlets, where they would be in the most imminent danger of perishing;—in short, that nothing was now to be thought of but a speedy return homewards. This was effected, not without the dispersion of the fleet, and considerable damage to some of the vessels.

These voyages contain notices of the country and people, which strikingly agree with those collected by recent navigators. This Meta Incognita, which includes only the countries bordering upon the entrances of Hudson's Bay, is considered as a cluster of large islands lying thick together, and separated by narrow inlets,—an idea, perhaps, not so unfounded as was for some time supposed. These provinces consist of mountains and high lands covered with snow, even in the midst of summer; and it appeared very surprising to find in latitude 60° and 61° a cold much more intense than at the North Cape and Wardhuys in latitude 72°. The people are described as of ripe-olive complexion, with long black hair, broad faces, and flat noses, much resembling Tartars, or, more strictly, Samoiedes, to whom, according to the best information Frobisher could obtain, they were also similar in their habits of life. The land could scarcely yield either grain or fruit, and the people made no attempt to cultivate them, eating merely shrubs and grass, "even as our kine do;" or, as Settle expresses it, "such grass as the country produceth they pluck up and eat, not daintily or salladwise, but like brute beasts devouring the same." In other respects, he observes, they seek "by their hunting, fishing, and fowling, to satisfy their greedy paunches, which is their only glory." They use neither seat, table, nor cloth; but "when they are imbrued with blood, knuckle deep, they use their tongues as apt instruments to lick them clean." From the manner in which, to the great disgust of the beholders, they devoured their meat in the most loathsome and putrid state, without any cookery or preparation, an inference is somewhat rashly drawn, that they would not make the least hesitation in partaking of human flesh. Frobisher could observe only their summer-houses, which are described as poor caves, like ovens, having holes like a fox or coney burrow, formed of pieces of whalebone meeting at top, and covered with seal-skin, and in the inside of which, by strewing moss, they formed nests to sleep on. At the same time they were found to be sharp-witted, and showed, by signs, great readiness both to understand and reply to the English. If they could give no information on any subject, they shut their eyes; if they did not comprehend what was said to them, they stopped their ears. They took the greatest delight in music; repeating and keeping time to any tune with voice, head, hand, and foot. Their darts, arrows, and other weapons, were skilfully contrived, and used with a courage amounting even to desperation, of which repeated instances have been given. Their little boats of skin (kayak) were moved by one oar, with a swiftness which no English sailor could match. Their astonishment at European objects appeared particularly when one of them was shown his visage in a mirror. "He was upon the sudden much amazed thereat,

and, beholding advisedly the same with silence a good while, at length began to question with him as with his companion; and finding him dumb, seemed to suspect him as one disdainful, and would have grown into choler, until at last, by feeling and handling, he found the deceit, and then, with great noise and cries, ceased not wondering, thinking that we could make men live and die at our pleasure." There were great signs of mutual attachment, especially between the male and female captive, who were brought home on the second voyage. She killed and dressed the dogs for him, and tended him carefully when sick, while he picked out the sweetest and fattest morsels and laid them before her; yet they lived entirely as brother and sister, without the slightest impropriety.

Our naval records do not inform us of the feelings excited in the nation by the return from this hard, perilous, and abortive voyage. The failure of successive attempts, and especially of one got up with so much cost and circumstance, probably produced its usual effect of lassitude and despondence. The glittering stone, which was to have converted this northern Meta into another Peru, was never more heard of; a few careful assays having doubtless established its utter insignificance. Frobisher recommended strongly the trial of the first mistaken inlet which he had entered, as being, in comparison of the other, broader, more patent, and every way more promising; but the people could by no means be roused to any farther efforts. He was obliged to seek in other climates employment for his daring and active spirit. He accompanied Sir Francis Drake to the West Indies; he commanded one of the largest ships in the armament which opposed the Spanish armada, and fought with such bravery, that he was decorated with the honours of knighthood. Being afterwards sent to assist Henry IV. against the League, and employed in the attack of a small fort on the coast of France, he received a wound from a ball, which, through unskilful treatment, proved fatal in November, 1594.

Seven years after Frobisher's last voyage, the spirit of the nation was again roused. Divers opulent merchants of London and of the west determined to "cast in their adventure;" and, leaving wholly out of view, the delusive hopes of gold which had misled Frobisher, directed theirs entirely to the discovery of a passage to India. They fitted out two vessels, the Sunshine and Moonshine, of 50 and 35 tons respectively, which were placed under the command of John Davis, a steady and determined seaman, endowed also with a large portion of courtesy and good humour, by which he was likely to render himself acceptable to the rude natives of those inhospitable shores: to promote which laudable purpose, he was provided not only with a supply of the trifling gifts suited to their taste, but with a band of music to cheer and recreate their spirits. This being a western navigation, Davis, on the 7th June 1585, set sail from Dartmouth. On the 19th July, as the seamen approached the Arctic boundary, they heard, amid a calm sea beset with thick mist, a mighty roaring, as of the waves dashing on a rocky shore. The soundings gave 300 fathoms; however, the captain and master pushed off in the boat to examine this supposed beach, but were much surprised to find themselves involved amid numerous icebergs, while all this noise had been caused by the rolling and beating of these masses against each other. Davis landed on some of these islands, and broke off pieces of ice, which, being carried to the ship, were converted into good water. Next day he came in view of the south-western coast of Greenland, which appeared the most dreary and desolate ever seen; "deformed, rocky, and mountainous, like a sugar-loaf, standing to our sight above the clouds. It towered above the fog like a white list in the sky, the tops altogether covered with snow, the shore beset with ice, making such irksome noise that it was called the *Land of Desolation*." The water on this coast was black and thick, like a standing pool, and though they saw many seals floating, and birds beating upon the water, none could be caught.

After sailing for several days along this dreary shore, without being able to approach on account of the ice, Davis pushed out north-westward into the open sea, hoping in "God's mercy to find our desired passage." On the 29th he came in view of a land in 64° north latitude, which was still only Greenland; but as the wind was unfavourable for proceeding westward, the air temperate, and the coast free from ice, he resolved to go on shore and take a view of the country and people. In the company of two others, he landed on an island, leaving directions for the rest to follow as soon as they should hear any loud signal. The party mounted the top of a rock, whence they were espied by the natives, who raised a lamentable noise, with loud outcries like the howling of wolves. Davis and his comrades thereupon struck up a high note, so modulated, that it might at once be alluring to the natives, and might summon his own crew to deeds either of courtesy or valour. Burton, the master, and others, hastened, well armed, yet with the band of music playing, and dancing to it with the most inviting signs of friendship. In accordance with this gay summons, ten canoes hastened from the other islands, and the people crowded round the strangers, uttering in a hollow voice unintelligible sounds. The English continued their friendly salutations, while the other party still showed jealousy, till at length one of them began pointing towards the sun and beating his breast. These signs being returned by John Ellis, master of the Moonshine, the natives were induced to approach; and being presented with caps, stockings, gloves, and whatever the navigators had, and continuing to be hailed with music and dancing, their fears gave place to the most cordial amity. Next day there appeared 37 canoes; the people from which kindly invited the English on shore, showing eager impatience at their delay. Davis manned his boats and went to them; one of them shook hands with him and kissed his hand, and the two parties became extremely familiar. The natives parted with every thing, the clothes from off their backs, consisting of seal skins, and birds' skins with the feathers on them, their buskins of well-dressed leather, their darts, oars, and five canoes, accepting cheerfully in return whatever their new visitors chose to present; and they kindly aided each other under the privations thus occasioned. They offered to return next day with an ample store of furs and skins, which they saw the foreigners value so highly; but a favourable breeze springing up, Davis very properly determined to allow nothing to interfere with his schemes of discovery. He steered directly across the strait, or rather sea, which still bears his own name. On the 6th August he discovered high land, which he named Mount Raleigh, being part of Cumberland Island. Here, anchoring in a fine road, the seamen saw three white animals, which seemed to be goats. Desirous of fresh victuals and sport, they pursued them, but discovered instead three monstrous white bears. The animals rushed on fearless and furious, till, being received with several balls, they retreated, apparently not much hurt, but were followed and at last killed. There appeared no symptoms of their having fed on anything except grass; but it was necessary to clear away a very large quantity of fat before the flesh could be eaten.

Davis, after coasting about for some days, again found himself at the cape which he had at first reached on his crossing from the opposite shore of Greenland. This promontory, which he called God's Mercy, he now turned, when he found himself in a sound stretching north-westward, twenty or thirty leagues broad, free from ice, and its waters having the colour and quality of the main ocean. After ascending it sixty leagues, he found an island in the mid channel, which still, however, afforded an open passage, so that his hopes daily increased. About the end of August, however, being involved in fogs and contrary winds, he determined to suspend operations for this season and return to England.

On one of the islands in this sound the seamen heard dogs howling, and saw twenty approach, of wolf-like appearance, but in most peaceful guise.

Impressed, however, with the idea that only animals of prey could be found on these shores, they fired and killed two, round one of whose necks they found a collar, and soon after discovered the sledge to which he had been yoked. Davis saw on this voyage abundance of the black and glittering stone of Frobisher, and many of the rocks appeared " orient like gold ;" but little attention was now excited by these delusive appearances.

Although nothing was actually done by this expedition, yet the ultimate views which it had opened to Davis, inspired sanguine hopes, and facilitated the equipment of a fresh expedition. To the slender armament of the Sunshine and Moonshine was now added the Mermaid of 120 tons, with a boat or pinnace. Davis sailed from Dartmouth on the 7th May, and on the 15th June came in view of the southern extremity of Greenland ; but, owing to severe storms, it was the 29th before he reached the land formerly visited in lat. 64°. As the English approached, the natives came out in their canoes at first with shouts and cries ; but, recognizing their companions of the former year, they hastened forward, and hung round the vessel with every expression of joy and welcome. Davis, seeing them in such favourable dispositions, went ashore and distributed in presents twenty knives, refusing the offer of skins in return. The most intimate acquaintance was now begun ; yet they never met the strangers anew without crying, " *Iliaout!*" beating their breasts and lifting their hands to the sun, by which a fresh treaty was ratified. The two parties amused themselves by contests in bodily exercises. The Esquimaux could not match their opponents in leaping ; but in wrestling they showed themselves strong and skilful, and threw some of the best English wrestlers. By degrees they began to manifest less laudable qualities. They exercised many and solemn incantations, though, Davis thanks God, without any effect. They kindled a fire by rubbing two sticks against each other, and invited him to pass through it; but he, in contempt of their sorcery, caused the fire to be trodden out, and the embers thrown into the sea. The natives showed soon a much more inconvenient propensity to appropriate every article, especially iron, which came under their notice. Perhaps it was imprudent ever to have made presents, thus suggesting the idea, which does not seem to have before entered their minds, that any thing could be obtained without an equivalent. However, they soon reached the highest pitch of audacity; they stole a spear, a gun, a sword, cut the cables, and even the Moonlight's boat from her stern. The leading personages of the crew remonstrated with Davis, that for their security he must "dissolve this new friendship, and leave the company of those thievish miscreants." Davis fired two pieces over their heads, which "did sore amaze them," and they fled precipitately. But in ten hours they again appeared with many promises and presents of skins; when, on seeing iron, "they could in nowise forbear stealing." The commander was again besieged with the complaints of his crew; however, "it only ministered to him an occasion of laughter," and he bid his men look vigilantly to the safety of their own goods, and not deal hardly with the natives, who could scarcely be expected in so short a time "to know their evils."

Davis now undertook an expedition to observe somewhat of the interior. He sailed up what appeared a broad river, but which proved only a strait or creek. A violent gust of wind having obliged him to seek the shelter of land, he attempted to ascend a every lofty peak; but "the mountains were so many and so mighty, that his purpose prevailed not." While the men were gathering muscles for supper, he was amused by viewing, for the first time in his life, a water-spout, which he describes as a mighty whirlwind taking up the water and whirling it round for three hours without intermission. Next day he re-embarked, and penetrated higher up the channel; but was surprised to find, instead of the huge unbroken continent which he had supposed, only waste and desert isles, with mighty sounds and inlets passing between sea and sea.

During the captain's absence matters had become worse with the Esquimaux. The mariners on his return opened a fearful budget; the natives had stolen an anchor, cut the cable, and even thrown stones of half a pound weight against the Moonlight; and he was asked if he would still endure these injuries. Davis, who probably suspected that the sailors' own dealings had not been very gentle, bid them have patience, and all should be well. He invited an Esquimaux party on board, made them various little presents, taught them to run to the topmast, and dismissed them apparently quite pleased. Yet no sooner had the sun set than they began to "practise their devilish nature," and threw stones into the Moonlight, one of which knocked down the boatswain. The captain's meek spirit was at length kindled to wrath, and he gave full warrant for two boats to chase the culprits; but they rowed so swiftly that the pursuers returned with "small content." Two days after, five natives presented themselves with overtures for a fresh truce; but the master came to Davis, remonstrating that one of them was "the chief ringleader, a master of mischief," and was vehement not to let him go. He was made captive, and, a fair wind suddenly springing up, the English set sail, and carried him away, many doleful signs being then exchanged between him and one of his countrymen; however, on being well treated, and presented with a new suit of frieze, his spirits revived, he became a pleasant companion, and used occasionally to assist the sailors.

Davis finding the wind favourable, pushed across the bay, in hopes of attaining the object of his voyage, On the 17th July the mariners descried a land diversified with hills, bays, and capes, and extending farther than the eye could reach; but what was their horror on approaching, to find that it was only "a most mighty and strange quantity of ice!" It was, in fact, that great barrier which often, for a great part of the season, fills the middle of Baffin's Bay. As they coasted along this mighty field, a fog came on, by which the ropes, shrouds, and sails, were all fast frozen,—a phenomenon which, on the 24th July, appeared more than strange. Dismayed by these observations, the seamen considered the passage hopeless, and, in a respectful yet firm tone, warned Davis, that by "his over-boldness he might cause their widows and fatherless children to give him bitter curses." Davis was willing to consider their case; yet, anxious not to abandon so great an enterprise, he determined to leave behind him the Mermaid, as a vessel less convenient and nimble, and to push on in the Moonlight with the boldest part of his crew. Having found a favourable breeze, he at last, on the 1st August, turned the ice, and in lat. 66° 33′ reached land; along which he now coasted southwards for about ten degrees, entangled among a number of islands, and missing, in his progress, the different inlets which afforded an entrance into Hudson's Bay. The shores were crowded with incredible flocks of gulls and seamews, and the water so abounded in fish, that, though their tackle was very indifferent, in the running of an hour-glass the crew caught a hundred cod. On reaching Labrador, the coast was seen covered with ample forests of fir, pine, yew, and birch; but five men who landed were beset by the natives, and two of them killed and two wounded. Davis being also exposed to a violent tempest, and seeing September arrive, judged it wisest to return to England.

The public were considerably damped by the issue of this expedition, so that Davis found no small difficulty in obtaining the means for equipping another. He was obliged to hold out the inducement, that, by proper arrangements, the outlay might be defrayed by fishing, and no additional expense incurred on account of discovery. By these arguments, and by the exertions of his zealous friend, Mr Sanderson, he succeeded in fitting out the Sunshine, the Elizabeth, and a pinnace. This last, to which he mainly trusted for discovery, answered very ill the character which had been given of it, and was found to move through the water like a cart drawn by oxen. On the 16th June (1587) the adventurers arrived at their old coast, and were received by the natives as before with the cry of *iliaout* and the exhibition of skins. These savages, however, lost no time in the renewal of their former system of thieving; for which great opportunities were afforded during the putting together of a boat with materials brought from England. They carried off the planks, and when fired at placed them before their bodies as shields, thus securing both their planks and persons. It was now arranged that the two large vessels should remain to fish, while Davis in the pinnace should stretch out into a higher latitude with a view to discovery. In pursuance of this plan he took his departure, and, continuing to range the coast to the northward, on the 28th he reached a point, which he named Sanderson's Hope, in upwards of 72 degrees, still finding a wide open sea to the west and north. Here, the wind having shifted, Davis resolved to hold on a western tack across this sea, and proceeded for forty leagues without sight of land or any other obstruction, when he was arrested by the usual barrier of an immense bank of ice. He first endeavoured to round it by the north, but, seeing no passage on that side, turned to the south, beating about for several days without success. Tempted by an apparent opening, he involved himself in a bay of ice, from which he was not extricated without much difficulty and some danger. He was obliged to wait the moment when the sea beating and the sun shining on this mighty mass should effect its dissolution. At length, on the 19th July, he came in view of Mount Raleigh, and at midnight found himself at the mouth of the inlet discovered in the first voyage, and which has since been called Cumberland Strait. Next day he sailed across its entrance, and in the two following days ascended its northern shore, till he was again involved among numerous islands. He seems now to have concluded this strait to be an enclosed gulf, and shaped his course to reach the sea; but, being becalmed in the bottom of the bay, he could not till the 29th, by coasting along the southern shore, effect his retreat. Frobisher's Strait was now passed, seemingly without being recognised as such, but was called Lumley's Inlet. He next crossed the mouth of an extensive gulf, in one part of which his vessel was carried along by a violent current, while in another the water was whirling and roaring as is usual at the meeting of tides. This recess, being terminated by Cape Chidley, was evidently the grand entrance afterwards penetrated by Hudson. Davis, however, who had only half a hogshead of water left, hastened to the point of rendezvous fixed with the two other vessels; but, to his deep disappointment and just indignation, he found that they had departed. It was not without hesitation that, with the slender store remaining in his little bark, he ventured to sail for England; but having scarcely any alternative, he undertook the voyage, and happily accomplished it.

Davis wrote still to Mr Sanderson in sanguine and almost exulting terms. He had reached a much higher latitude than any former navigator, and, with the exception of the barrier of ice on one side, had found the sea open, blue, of vast extent and unfathomable depth. He considered, therefore, that the success of a spirited attempt was almost infallible. But the interest taken by the nation in such enterprises seems only capable of being sustained for a certain period. Three failures had exhausted that interest, and made men indisposed to listen or inquire further into the subject. It became the cry, as he informs us,—"This Davis hath been three times employed; why hath he not found the passage?" The death of Secretary Walsingham occurring at this period was a severe blow to the cause, while the invasion by the Spanish Armada soon followed, and engrossed for a space all the thoughts and energies of the nation. Mr Sanderson still continued the steady friend of Davis; but, unable to obtain resources for a new armament, he could only employ Molyneux, the best artist of his time, to construct a globe which comprised all that navigator's discoveries, and is still preserved in the library of the Middle Temple.

In 1602 the spirit of the nation revived. To the Muscovy Company, which had taken the great lead in all the early schemes of discovery, was now added the Levant Company; and these two great bodies, finding the course to India by the Cape still beset with many dangers, determined upon a joint effort to penetrate thither by the north-west. They sent out Captain George Weymouth with two vessels, the Discovery and God-Speed, which they called fly-boats, though they were respectively of 70 and 60 tons. He left London on the 2d May, and on the 18th June came in view of the coast of Greenland, which appeared to him "a main bank of ice." The water was in many places as thick as puddle, making him imagine himself among shallows, till the sounding-line gave 120 fathoms without any ground. This, formerly observed by Davis, was probably the green cloudy sea of Scoresby, thickened by the infusion of numberless animalcules.

Weymouth having made sail westward with a favourable breeze, came, on the 28th, in sight of the coast of America. There appeared a promontory covered with snow, which he concluded to be Warwick's Foreland; but the vessels were tossed to and fro by violent currents, or over-falls, as he calls them, and involved in fogs so thick, that they were once quite close to a bank of ice before it was perceived. However, being in want of water, the party landed, loaded their boat with ice, and found it to make very palatable drink. The crews heard a great sound like the dashing of waves on the shore; on making up to which they were dismayed to find it "the noise of a great quantity of ice, which was very loathsome to be heard." The mist became so thick, that they could not see two ships' length, and determined to take down the sails; but were petrified to find them so fast frozen to the rigging, that in "this chiefest time of summer they could not be moved." Next day they renewed the attempt; but it was only by cutting away the ice from the ropes that they could be made to move through the blocks. The following day the fog lay so thick, and froze so fast, that ropes, sails, and rigging, remained immoveable.

These phenomena produced a disastrous effect on the minds of the sailors, who began to hold secret conferences, ending in a conspiracy "to bear up the helm for England." It was proposed to seize Weymouth, and confine him in his cabin till he gave his consent; but the captain receiving notice of this nefarious design, called the seamen before him, and in presence of Mr Cartwright the preacher, and Mr Cobreth the master, called upon them to answer for thus attempting to overthrow a voyage fitted out at such ample cost by the honourable merchants. The men stood firm, producing a paper signed by their own hands, in which they justified the proposed step as founded on solid reason, without any tincture of fear or cowardice. They represented, that if they should suffer themselves to be enclosed in an unknown sea, by this dreadful and premature winter, they would not only be in imminent danger of perishing, but could not hope to commence their career of discovery next year sooner than May; while by setting sail in due time from England they might easily reach this coast in that month. Weymouth retired to his cabin to deliberate, when he heard it announced that the helm was actually borne up. Hastening on deck, and asking who had done this, he was answered, "One and all!" and he found the combination such as it was impossible to resist, though he took occasion afterwards to chastise the ringleaders. The men, however, declared themselves ready to hazard their lives in any discovery which might be attempted to the southward.

Accordingly, on descending to 61° N. lat., Weymouth found himself at the entrance of an inlet, into which he sailed in a south-west direction, a hundred leagues by reckoning; but encountering fogs and heavy gales, and finding the season far spent, he deemed it necessary to regain the open sea. This inlet, however, was thought to present more favourable hopes of a passage than any other that had yet been discovered. It appears in fact to have been the grand entrance of Hudson's Bay; so that Fox justly ascribes some merit to Weymouth in directing that great navigator into this spacious expanse. As his course, however, of west by south, must have led him off the main channel of this large strait, and thrown him on the western shore of what is now called Ungava Bay, his estimated reckoning of a hundred leagues is evidently overrated. In 55° he found a fair land, consisting of islands and "goodly sounds," apparently the place where the Moravian settlement of Nain was afterwards formed. Soon after, a dreadful hurricane from the west seemed to take up the sea into the air, and drove the ships before it with the utmost impetuosity. Had it been from any other quarter they must have been dashed to pieces on rocks; however they ranged through the open sea, and in the greatest extremity "the Lord delivered us his unworthy servants." He had now an easy navigation to England.

No farther proceedings occurred till 1606, when the Muscovy and East India merchants fitted out a vessel of forty tons under John Knight, who had been employed in the Danish voyages to Greenland, and was considered a stout and enterprising sailor. He sailed from Gravesend on the 18th April, but was detained a fortnight in the Pentland Frith; however, "two lustie fellows, well acquainted with these north parts of Scotland," took him into a good harbour called St Margaret's Hope, where he remained till the 12th May. He directed his course almost due west, towards America, and had reached the latitude of 58°, when winds and currents bore him to the southward. On the 19th June he was in 56° 48′, when he saw the continent rising like eight islands. The vessel, however, had been so distressed with tempest and heavy fogs, and so bruised between mighty islands of ice, that it was necessary to put it into a little cove to refit. Here the wind blew with such violence, bringing great islands of ice against the vessel, that the rudder was torn from the stern; and hence it became necessary to hale it on shore at the bottom of the cove, that it might undergo a thorough repair.

On the 26th, Knight, with some of his men well armed, went across in the boat to the opposite coast, in search of a better harbour, and to take a survey of the country. With this view, the captain, his mate, and another, went over a hill, leaving three men in charge of the boat. These last waited the whole day in anxious expectation of the return of the party; they then sounded trumpets, fired muskets, and made every imaginable signal, but without effect. After waiting till eleven at night, they gave up hopes, and returned to the ship with these black and doleful tidings. The crew were struck with the deepest dismay at having thus lost their captain and best officers, and being themselves left in such deplorable circumstances. The boat was fitted out next morning for search, but could not cross the channel on account of the ice. After two distressful days, on the night of Saturday the 28th June, as the boatswain was keeping watch in advance of the tents, he suddenly saw, rushing through the darkness, a great body of men, who, on descrying him, let fly their arrows. He instantly fired, and gave the alarm; but, before the crew could start from bed and be mustered, the shallop was filled with fifty savages, who, with loud cries and menacing gestures, showed themselves prepared for immediate attack. The English mustered only eight men and a large dog, and though the rain fell in torrents, they determined rather to perish bravely, assailing this savage enemy, than to wait their onset. They advanced, therefore, placing the dog foremost. This bold front appalled the savages, who leaped into their boats, and made off with all speed; but they were entangled in the ice, and detained a considerable time, during which the pursuers continued firing, and the savages were heard "crying to each other very sore." They are represented, so far as could be judged, as very small people, tawny-coloured, with thin, or no beards, flat-nosed, and man-eaters; but this last particular was doubtless hypothetical.

The mariners, placed in this alarming situation, made all the haste they could to fit their shattered bark for again taking the sea. They had first to cut a way for her through the ice; but they had nothing which could be called a rudder, and the leaks were so large, that the sailors could scarcely enjoy half an hour's relief from the pump. At length they found means to stop up tolerably the principal fissure, and, after hard rowing and pumping for three weeks, succeeded in reaching the coast of Newfoundland. Among the fishing vessels on that station, they found most kind and loving friends, who supplied all their wants; and after twenty days spent in repairing their ship, and refreshing their bodies, the crew enjoyed a good passage to Dartmouth, whence they transmitted to London an account of the doleful issue of their voyage.

It was Hudson that now stood foremost in the career of northern discovery, and earned a fame which has placed him among the greatest of British navigators. We have traced his career in former chapters—first in the daring attempt to cross the Pole itself; then in his second voyage for the north-east passage; and also in his third excursion, which ended in the discovery of the river now associated with his name. But the most eventful of his voyages, and that marked by the grandest result, was the one which closed his labours, undertaken with a view to a western passage. The narrative of the commander himself is only a meagre journal, brought down to a particular point of the voyage; but a full relation is given by a certain personage, naming himself Abacuk Pricket, against whose testimony, however, for reasons that will appear in due time, there rest some heavy objections. This expedition was fitted out by Sir John Wolstenholme, Sir Dudley Digges, and other persons of distinction, who did not, however, project it on a very magnificent scale. It consisted only of one vessel of 55 tons, provisioned for six months, which left the Thames on the 17th April, 1610. Hudson touched at the north of Scotland, the Orkney and the Faroe Islands, all which he judged to lie not in so high a latitude as the maps represented. On the 11th May he descried the eastern part of Iceland, and was enveloped in a thick south fog; hearing the sea dashing against the coast without seeing it. He was thus obliged to come to anchor; but, as soon as the weather cleared, he proceeded westward along the coast till he reached Snow Hill (Snaefell), which rears its awful head above the sea that leads to the frozen shores of Greenland. On their way the navigators saw Hecla, the volcano of which was then in activity, vomiting torrents of fire down its snowy sides, with smoke ascending to the sky; an object not only fearful in

itself, but which struck them with alarm, as an indication of unfavourable weather.

Leaving the Icelandic coast they now sailed westward, and, after being deceived by illusory appearances of land, at length saw the white cliffs of Greenland towering behind a mighty wall of ice. Without attempting to approach the coast, Hudson sailed towards the south-west, and passed what he imagined to be Frobisher's Straits, which in fact long continued to be laid down on the coast of Greenland, though with manifest error, since they evidently belong to that of America. Hudson now turned Cape Farewell, and "raised the Desolations," making careful observation of those coasts, which he found not well laid down in the charts. The mariners soon began to descry, floating along, the mighty islands of ice,—a sight which appalled all but the stoutest hearts. Onward they sailed, however, sometimes enjoying a clear and open sea, but often encompassed by these mighty masses, or by the small and drifting heaps; and at length they had to steer as it were between two lands of ice. They sometimes moored themselves, on occasions of peril, to these icebergs; but seeing one of them dispart, and fall with a tremendous crash into the sea, they no longer trusted to such a protection. On the 25th June land appeared to the north, was again lost sight of, and afterwards discovered to the south; so that they found themselves at the broad entrance of the channel which has since obtained the name of Hudson's Strait. They were now still more pestered with ice in various forms, particularly that of large islands standing deep in the water, which were more difficult to avoid from the violent ripples and currents. Thus they were often obliged, especially amid thick fogs, to fasten themselves to the largest and firmest of these masses, upon which they used to go out from time to time, collecting the water melted in the hollows, which proved to be sweet and good. Amid these vicissitudes many of the sailors fell sick; and though Pricket does not choose to assert that their sole malady was fear, yet in many he saw small symptoms of any other. The crews of that period, indeed, display few symptoms of the patience and hardihood with which those of Willoughby and Frobisher had first braved the northern tempests. Hudson, seeing his men in this depressed temper, bethought himself of an expedient by which he hoped to animate them. He called them together, showed them his card (chart,) from which it appeared that they had penetrated farther into the Straits by a hundred leagues than any former expedition, and put it to themselves whether they would proceed, yea or nay. This was a bold experiment, but did not succeed. Some, it is true, expressed themselves "honestly respecting the good of the action;" but others declared they would give nine-tenths of all they were worth, so that they were safe at home: others said they did not care where they went, so they were out of the ice. Hudson, vexed and disappointed, broke up the conference, and followed his own determination. This, we think, is evidently the real state of the case, though Pricket represents the captain himself as in a state of alarm and doubt. He accuses him also of having remembered too long some of the speeches made on this occasion, to the disadvantage of those by whom they had been uttered.

Notwithstanding this failure, Hudson, buoyed up by his own courage and hardihood, seeing land alternately on one side and the other, having sometimes a wide and clear sea, and being sometimes involved amid mountains of ice, made his way onward. Certain rocky islands in which, when severely pressed by the wind and floe, he found a tolerable harbour, were called "Isles of God's Mercy;" but even this harbour was rendered dangerous by hidden reefs; and the island adjoining to it contained, according to Pricket, only "plashes of water and riven rocks," and had the appearance of being subject to earthquake. At length they arrived at a broad opening, having on each side capes, to which Hudson gave the names of the two chief patrons of the voyage; to the one on the continent, that of Wolstenholme; to the other on the large island of Mansfield, that of Sir Dudley Digges. Landing at the island cape, and mounting a hill, the men descried some level spots abounding in sorrel and scurvy-grass, plants most salutary in this climate; while herds of deer were feeding, and the rocks were covered with an unexampled profusion of fowls. Seeing such ample materials, both for sport and food, the crew, who had ever shown the most anxious concern for their own comfort, earnestly besought Hudson to allow them to remain and enjoy themselves for a few days on this agreeable spot. But that great navigator, seeing the season for his chief enterprise rapidly passing away, repelled such an overture. He had not long proceeded through this channel when the coasts on each side were seen to separate, and he beheld before him an ocean-expanse, to which the eye could discover no termination. It seemed to him, doubtless, a portion of the mighty Pacific. Here, however, Hudson's narrative closes, without expressing those feelings of pride and exultation which must have filled his mind at this promised fulfilment of his highest hopes. The relation of Pricket, on which we must now depend, shows too clearly that many of his crew would have had no sympathy with such elevated feelings.

The expanse thus discovered by Hudson was the great inland sea, called from him Hudson's Bay; and it was a grand discovery, though not exactly what he imagined. The third of August was now arrived, a season at which the boldest of northern navigators had been accustomed to think of returning. Little inclined to such a course, he continued to sail along the coast on the left, which must have appeared to him the western boundary of America; hoping probably before the close of autumn to reach some cultivated and temperate shore, where he might take up his winter-quarters. The shores along this bay, however, though not in a very high latitude, are subject to a climate the most rigorous and inclement. Entangled in the gulfs and capes of an unknown coast, struggling with mist and storm, and ill seconded by a discontented crew, he spent three months without reaching any comfortable haven. It was now the 1st November, the ice was closing in on all sides, and nothing remained but to meet the cheerless winter which had actually begun. The sailors were too late of attempting to erect a wooden house; yet the cold, though severe, does not seem to have reached any perilous height. Their chief alarm respected provisions, of which they had brought only a six months' supply, and consequently had now only a small remnant left. Hudson took active measures to relieve this want. He carefully husbanded the original stock, and propounded a reward to whoever should kill beast, fish, or bird; and "Providence dealt mercifully" in sending such a supply of white partridges, that in three months they killed a hundred dozen. In spring these birds disappeared, but were succeeded by flocks of geese, swans, ducks, and teal, not denizens of the spot, but on their flight from south to north. When these were passed, the air no longer yielded a supply, but the sea began to open, and having on the first day taken five hundred fishes of tolerable size, they conceived good hopes; but this success did not continue. Being reduced to great extremity, they searched the woods for moss, which they compare, however, to pounded timber: they ate even frogs. The commander undertook an excursion with a view to open an intercourse with the natives, but they fled, setting fire even to the woods behind them. Parley was obtained with one, who was loaded with gifts, yet he never returned. Discontents arose as to the distribution of the small remaining portion of bread and cheese, to allay which the captain made a general and equal partition of the whole. This was a bad measure among such a crew, many of whom knew not how "to govern their share," but greedily devoured it as long as it lasted. One man even ate the whole in a day, and brought on a dangerous surfeit. Their distress, becoming thus greater than ever, soon brought on a most fatal crisis.

Hudson, as may be observed, had from the first to struggle with an unprincipled, ill-tempered crew, void of any concern for the ultimate success of the voyage. He had probably hoped, as the season should advance, to push on southwards, and reach next summer the wealthy regions which he was commissioned to search. The sailors, on the contrary, had fixed their desires on "the cape where fowls do breed," the only place where they expected to obtain both present supply and the means of returning to England. Ringleaders were not wanting to head this growing party of malcontents. At the entrance of the bay the captain had displaced Ivet the mate, who had shown strong propensities towards returning, and appointed in his room Bylot, a man of merit, and who had always shown zeal in the general cause. He had also changed the boatswain. But the most deadly blow was struck by Green, a wretch whom, after he had been cast off by all his friends, Hudson, from humanity, had taken on board, and endeavoured to reclaim and restore to society. He was possessed of talents which had made him useful, and even a favourite with his superior; and among other discontents, it was reckoned one, that a veil was thrown over several flagrant disorders of which he had been guilty. Yet some hot expressions of Hudson, caused, it is said, by a misunderstanding about the purchase of a grey coat, so acted on the fierce spirit of this ruffian, that, renouncing every tie of gratitude and all that is sacred among mankind, he became the chief in a conspiracy to seize the vessel and expose the commander to perish.

After some days' consultation, the time was fixed for the perpetration of this horrible atrocity. On the 21st June, 1611, Green, and Wilson the boatswain, came into Pricket the narrator's cabin, and announced their fatal resolution ; adding, that they bore him so much good-will as to wish that he should remain on board. Pricket avers most solemnly, that he exhausted every argument which might induce them to desist from their horrid purpose, beseeching them not to do so foul a thing in the sight of God and man, and which would for ever banish them from their native country, their wives and children. Green wildly answered, that they had made up their minds to go through with it or die, and that they would rather be hanged at home than starve here. An attempt was then made to negotiate a delay of three, two, or even one day, but all without effect. Ivet came next, of whom, as being a person of mature age, there seemed more hope ; but he was worse than Green, declaring that he would justify in England the deed on which they had resolved. John Thomas and Michael Perce now came in, proving themselves " birds of a feather," and Moter and Bennet having followed, an oath was administered to the following tenor :—" You shall swear truth to God, your prince, and country ; you shall do nothing but to the glory of God and the good of the action in hand, and harm to no man." Pricket complains of the reproach thrown upon him for having taken this oath, the bare terms of which are certainly unexceptionable; but the dark context by which they were illustrated marks them as containing an implied obligation to remain at least passive on this dreadful occasion. All was now ready, but Pricket persuaded them to delay till daylight the accomplishment of their crime. They agreed, but kept strict watch through the night, and held themselves ready to act at the first appearance of dawn.

Daybreak approaching, Hudson came out of his cabin, when he was instantly set upon by Thomas, Bennet, and Wilson, who seized him and bound his hands behind his back; and on his eagerly asking what they meant, told him he should know when he was in the shallop. Ivet then attacked King the carpenter, known as the commander's most devoted adherent. That brave fellow, having a sword, made a formidable resistance, and would have killed his assailant, had not the latter been speedily reenforced. The mutineers then offered to him the choice of continuing in the ship; but he absolutely refused to be detained otherwise than by force, and immediately followed his master, whom the conspirators were already letting down the sides of the vessel into the shallop. Then, with a barbarity beyond all example, they called from their beds and drove into it, not the firm adherents of Hudson, but the sick and infirm sailors who could afford no aid, and whose support would have been burdensome. They threw after them the carpenter's box, with some powder and shot. Scarcely was this transaction completed, when they cut off the boat from the stern, "out with their topsail," and set off, flying as from an enemy. Hudson, thus abandoned, was never heard of more; and this great navigator undoubtedly perished on those remote and desolate shores, though the form or duration of the distress to which he fell a victim must be for ever unknown.

The sailors, as soon as the guilty deed was accomplished, fell upon the ship as on a captured vessel, breaking open every chest, and seizing on every remnant of food which could be discovered. Green, however, who now assumed the command, used some vigour in restoring order. He placed the cabin and provisions under the charge of Pricket, who was afterwards accused of a matter no less than treason,—that of secreting some cakes of bread. As soon as the mutineers had time to reflect, rueful musings began to arise. Even Green admitted that England at this time was no place for them, nor could he contrive any better scheme than to keep the high sea till, by some means or other, they might procure a pardon under his Majesty's hand and seal. The vessel was now embayed, and detained for a fortnight amid fields of ice, which extended for miles around it; and, but for some cockle-grass found on an island, the crew must have perished by famine. Considerable disputes with respect to the steerage arose between Ivet and Bylot, who alone had any pretensions to skill; but the latter, being justly viewed with the greatest confidence, at length guided them to Cape Digges, the longed-for spot, the breeding-place of fowls, clouds of which accordingly continued still to darken the air. The party immediately landed, spread themselves among the rocks, and began to shoot. While the boat was on shore, they saw seven canoes rowing towards them, whereupon "they prepared themselves for all assayes." However the savages came forward, beating their breasts, dancing and leaping, with every familiar and friendly sign. The utmost intimacy commenced, the parties went back and forward, showed each other their mode of catching fowls, and made mutual presents and exchanges. In short, these appeared the most kind and simple people in the world, and "God so blinded Henry Green," that he viewed them with implicit confidence. One day, amid the height of this intimacy, Pricket, sitting in the boat, suddenly saw a man's leg close to him. Raising up his head, he perceived a savage with a knife uplifted and ready to strike. In attempting to arrest the blow, his hand was cut, and he could not escape three wounds, one in the breast, and one in the right thigh; by which time he got hold of the handle of the knife and wrenched it from the assassin, whom he then pierced with his dagger in the left side. At the same time a general attack was made on the English crew, dispersed in different quarters. Green and Perse came tumbling down wounded into the boat, which pushed off, while Moter, "seeing this medley," leaped into the sea, swam out, and, getting hold of the stern, was pulled in by Perse. Green now cried *coragio,* and he and Perse brandished their weapons with such vigour, that the savages ceased attempting to enter the boat; but they poured in clouds of arrows, one of which struck Green with such force that he died on the spot, and his body was thrown into the sea. At length the party reached the vessel; but Moter and Wilson died that day, and Perse two days after. Thus perished the chief perpetrators of the late dreadful tragedy, visited by Providence with a fate not less terrible than that which they had inflicted on their illustrious and unfortunate victim.

The crew, thus deprived of their best hands, were in extreme perplexity, obliged to ply the ship to and fro across the straits, and unable, without the utmost fear and peril, to venture on shore; which yet was absolutely necessary for obtaining provisions to carry them to England. They contrived, during some anxious and unhappy excursions, to collect three hundred birds, which they salted and preserved as the only stock whereupon to attempt the voyage. They suffered, during the passage, the most dreadful extremities of famine, allowing only half a fowl a-day to each man, and considering it a luxury to have them fried with candles, of which a weekly distribution was made for that purpose. Ivet, now the sole survivor of the ringleaders in the late dreadful transaction, sunk under these privations. The last fowl was in the steep-tub, and the men were become careless or desperate, when suddenly it pleased God to give them sight of land, which proved to be the north of Ireland. They complain that, on going ashore at Berehaven, they did not meet the sympathy and kindness which they so much needed; however, by mortgaging their vessel, they obtained the means of proceeding to Plymouth.

Purchas closes the narrative by saying,—"Well, Mr Pricket, I am in much doubt of thy fidelity;" and he is not singular in this suspicion. It seems clear that this person did not avail himself of all the means by which he might have attempted to check the atrocious mutiny. Probably, however, had he been an active agent in the crime, he would have been betrayed by some of his accomplices; or, if they had been all bound together by mutual guilt, they would have invented some story which would have palliated or concealed the offence altogether; whereas it is set forth by this narrative in all its atrocity.

Notwithstanding the calamitous and deplorable issue of this voyage, the discovery thereby made of a great open sea in the west seemed to justify the most flattering hopes of accomplishing a passage. To follow out this prospect, Captain, afterwards Sir Thomas Button, was despatched next year, (1612,) having Bylot and Pricket as guides. Button seems to have been an active and resolute seaman. He soon made his way through the Straits, and, pushing directly across the great sea which opened to the westward, he came in view of an insular cape, which he called Carey's Swan's Nest, and which afterwards proved to be the most southern point of Southampton Island. Nothing else broke the apparent continuity of the ocean, and he cherished sanguine hopes that the first coast he should see would be that of Japan. Suddenly the alarm of land was given, when there appeared before him an immense range of Arctic coast, stretching north and south, and barring all farther progress. Button, deeply disappointed, gave to it the name of Hope Checked. Before he had time to look for an opening, the gloom of the northern winter began to gather, and it behoved him to seek quarters for the season. These he found in the same creek and river, which afterwards became the principal settlement of the Hudson's Bay Company. In spite of his best precautions, he lost several men through the severity of the cold, and was unable to extricate himself from the ice till the middle of June. He then steered northward, and sought an opening through the broad bay between the continent and Southampton Island, since called Roe's Welcome. Seeing this channel, however, become narrower and narrower, till it apparently closed, he gave up the attempt, and, after touching at several points of the island just named, returned to England.

Although Button had been thus baffled by the unwelcome encounter of the western shore of Hudson's Bay, the merchants still justly considered it by no means ascertained that this coast was so extensive and continuous as to preclude all passage into the ocean beyond America; they lost not a season, therefore, in fitting out (1614) two vessels under Captain Gibbons, an officer of reputation, pronounced by Button "not short of any man that ever yet he carried to sea." But either his reputation went beyond his merits, or fortune was singularly adverse, for never was there a more abortive voyage. He was early entangled in a bay on the coast of Labrador, in which he was detained the whole summer, and which was afterwards dignified with the appellation of "Gibbons his Hole." Having here sustained some damage from the ice, he had no sooner extricated himself than he returned home.

The merchant-adventurers, still undismayed, sent out next summer (1615) the Discovery under Bylot, who in all the late voyages had approved himself a skilful navigator, and was accompanied by Baffin, whose name was now established as the most skilful steersman and best nautical observer of the age. After passing Cape Farewell, they saw some most tremendous islands of ice, one of which rose 240 feet above water, and, according to the usual estimate, which makes this visible part only a seventh of the whole, had probably an entire height of 1680 feet. They entered the Straits, and having, on the 2d June, heard from the northern shore a tremendous barking of dogs, landed and found five tents covered with seal-skin, amongst which were running about thirty-five or forty of these animals. of a brinded black colour, resembling wolves. They had collars and harness suitable for certain sledges, lined with fish-bone, which were standing by. In one of the houses was a bag with little images of men, the only notice we find of any such fabrication upon this coast. The navigators soon descried a canoe with twenty individuals, whom they hailed with Greenland words of courteous import, holding up knives and other toys. Friendly salutations were given in return; but neither party chose to trust themselves within reach of the other. At a little distance, the conflict of opposite currents amid large icebergs caused so fearful a grinding, that they gave to the adjoining land the name of Mill Island. There they would have been in extreme danger "had not God, who is stronger than ice or stream," delivered them.

The policy of Bylot in this voyage seems to have been to keep close to the northern shore of the strait; and thus, entering Hudson's Bay at a higher latitude, he hoped to keep clear of those lands which had barred the westerly career of his predecessors. On reaching, therefore, Hudson's Isles of God's Mercy, instead of steering southward to Cape Dudley Digges, he proceeded directly west, and arrived in the broad expanse, afterwards called the Fox Channel. At length, indeed, he saw land, but it was bounded by a cape which had every appearance of being the most northerly point of America. He called it Cape Comfort; though this name, it soon appeared, was premature, for a single day had not elapsed when "his sudden comfort was as soon quailed." They were now on the eastern coast of Southampton Island, which spread on every side its almost measureless extent, seeming to preclude every prospect of an opening on either hand. Disappointment, the lateness of the season, and the pressure of the ice, concurred in persuading Bylot that there was nothing to be hoped for here, and determined him to set sail immediately for England; whither he carried a most unfavourable report as to any prospect of penetrating westward in that direction.

But the adventurers were not discouraged by this unfavourable result. Turning their hopes to a different quarter, next year (1616) they again fitted out Bylot and Baffin with instructions no longer to attempt the passage by Hudson's Bay, but to enter the *Fretum Davis*, (Davis's Straits,) and push due north till they reached lat. 80°, if an open sea should allow them to proceed so far; then, turning to the westward, to round, if practicable, the extreme point of America, and to bear down upon Japan. Respecting this voyage, which, perhaps, of all those to the north, produced the most memorable discoveries, Baffin has favoured us with only a very meagre narration. Following the course pointed out, he reached, on the 30th May, Hope Sanderson, the farthest point of Davis's progress.

Soon afterwards the expedition came to a number of small islands, on which they found only females, some of very great age. These at first ran and hid themselves among the rocks; but the sailors having reached two dames, one of whom was estimated at fourscore, and having presented to them bits of iron and the usual toys, the latter carried a favourable report to their youthful countrywomen. The whole party soon came down to the shore, and four even went on board the boat. The charms of these ladies were heightened or disfigured by long black streaks made in their youth with a sharp instrument, and lodged so deep that they could not now be effaced. It was observed, too, that the dead were buried merely by piling stones over them, above which the body appeared, secured, however, from putrefaction by the extreme cold of the climate. The navigators sailed onwards in lat. 74°, when they were arrested by a large body of ice, and obliged to turn into a neighbouring sound to wait its melting. Here they received repeated visits from about forty-two natives, the only account of whom is, *that they brought an extraordinary quantity of the bones of sea-unicorns or narwals, great numbers of which were seen swimming in the water.* Hence this was called Horn Sound. The mass of ice now dissolved before the powerful influence of the sun, and the discoverers sailed northwards among its fragments; but still snow fell every day, and the shrouds and sails were often so hard frozen as to make it impossible to handle them. In 76° they came to a fair cape, and then to a fair sound, to which they gave the respective names of Digges and Wolstenholme, the two main promoters of this undertaking, and whose zeal was already associated with localities in the interior of Hudson's Straits. After having sustained a somewhat severe storm, the expedition discovered another sound, which would have supplied them with a multitude of whales, had they been duly provided with the means of capture: this they called Whale Sound. Next, in 78°, appeared another inlet, the widest and greatest in all this sea, and which was named after Sir Thomas Smith, one of the main promoters of discovery. This opening, which Baffin seems to have examined very superficially, abounded almost equally in whales, and caused particular astonishment by the extraordinary aberration of the needle, to which nothing similar had been ever witnessed. Between these two sounds was an island which was named Hakluyt, after the venerable recorder of early English discoveries. Proceeding now along the south-western boundary of this great sea, the next "fair sound" received the name of Alderman Jones, another patron of these laudable pursuits. It may be remarked, that Baffin *notices all these inlets, of which he was the first discoverer, in the most cursory manner, without mention of any attempt to trace, in their interior depths, an opening into any sea beyond.* In lat. 74° there appeared another broad opening, which was called Sir James Lancaster's Sound; but while he calls it great, he seems scarcely to have noticed this future entrance into the Polar sea; on the contrary, he observes, at the very same moment, that the hope of a passage became every day less and less. He sailed on; but a barrier of ice prevented him from approaching the shore till he came within the "indraft" of Cumberland's Isles, "where hope of passage could be none." Finding the health of his crew rather declining, he sailed across to Greenland, where an abundance of scurvy-grass boiled in beer quickly restored them; and "the Lord then sent a speedy and good passage homeward."

On returning, he expressed the most decided conviction that the great sea which he had traversed was a bay enclosed on all sides, and affording no opening into any ocean to the westward; and his judgment was received by the public, who named it from him Baffin's Bay. He forcibly, however, represented the great opportunities which it afforded for the whale-fishery, as those huge animals were seen sleeping in vast numbers on the surface of the water, without fear of the ship "or of any thing else." Davis's Straits, accordingly, have ever since been a favourite resort of the fishers, who have not, however, often ventured into those high latitudes, where whales are described by Baffin as more peculiarly abundant.

There was now a pause in English discovery; every quarter had been tried, and none seemed to afford any farther promise. Denmark, however, which has always felt a natural interest in northern navigation, made an attempt to follow up the success of Hudson and Baffin. In 1619, Christian IV. sent out two well-appointed vessels under Jens Munk, who had the reputation of a good seaman. He succeeded in penetrating through Hudson's Straits into the bay, whereupon he took upon himself to change the whole nomenclature of that region, imposing the names of Christian's Straits and Christian's Sea, and calling the western coast New Denmark. But this innovation, which was contrary to every principle recognized in such cases, has not been confirmed by posterity. When September arrived, and the ice closed in, he thought it prudent to seek winter-quarters, and, accordingly, established himself in the mouth of an opening, which, it is highly probable, was that channel which has been since called Chesterfield Inlet. The season seemed to open with the best promise, commodious huts were constructed, and there were both abundance and variety of game. The Danes saw some of those brilliant aerial phenomena which are peculiar to those latitudes; at one time two and at another three suns in the sky, and the moon once environed by a transparent circle, within which was a cross cutting through its centre; but, instead of amusing their minds with these beautiful appearances, they were depressed by viewing them as a mysterious presage of future evils. Frost now set in with all its intensity; their beer, wine, and other liquors, were converted into ice; the scurvy began its ravages, and, ignorant of the mode of treating it, they employed no remedy, except a large quantity of spirits, which has always been found to aggravate that frightful disorder. Unfit for the exertion necessary to secure the game with which the country abounded, they soon had famine added to their other distresses. Their miseries seem to have been almost without a parallel, even in the dark annals of northern navigation. Munk himself was left four days in his hut without food; at length, having crawled out, he found that, of the original crew of fifty-two, no more than two survived. He and they were overjoyed to meet, and determined to make an effort to preserve life. Gathering strength from despair, they dug into the snow, under which they found herbs and grass, which, being of an anti-scorbutic quality, soon produced a degree of amendment. Being then able to fish and shoot, they gradually regained their natural vigour. They equipped anew the smaller of the two vessels, in which they reached home, on the 25th September, 1620, after a stormy and perilous voyage. Munk declared his readiness to sail again; and there are various reports as to the cause why he did not. Some say that having, in a conference with the king, been stung by some expressions which seemed to impute the disasters of the voyage to his mismanagement, he died of a broken heart. But Forster relates, that, during several successive years, he was employed by the king on the North Sea and in the Elbe, and that he died in 1628, when engaged in a naval expedition.

The English, after Baffin's expedition appeared to have shut out all prospect of discovery in the more northern seas, confined for a long time all their efforts in the direction of Hudson's Bay. As these did not lead to any important results, and are chiefly connected with the remoter settlements of America, we shall introduce here only a very slight sketch of them.

Captains Fox and James were fitted out in 1631. The former examined two passages leading to the northward, one on the western side of Southampton Island, called Sir Thomas Roe's Welcome; the other on the eastern side, called from himself Fox's Channel; but he did not trace either to any great height. James, entangled in the southern extremity of Hudson's Bay, spent a winter under the most extreme suffering from cold, and returned next summer to England.

About 1668 a settlement was formed in Hudson's Bay, and an extensive company established for the traffic in furs; but this association, though bound by their charter to make the most strenuous exertions for the discovery of a western passage, concerned themselves very little with the subject till 1719, when they were in a manner compelled to fit out an expedition under Knight and Barlow. These officers, however, never returned, and a vessel sent next year under Captain Scroggs could learn no tidings of them. Nor was it till nearly fifty years afterwards that the wrecks of their armament were found on Marble Island, where they appear to have been cast ashore and lost.

In 1741, after a long interval, Captain Middleton, supported by a gentleman of the name of Dobbs, obtained the command of two vessels, with which he sailed up the Welcome. He came to a long inlet called the Wager, but it appeared quite enclosed by land, with a river falling into it. Proceeding to the northern extremity of the Welcome, he found a spacious opening, that afforded at first the greatest hopes; but, finding it also shut in by land, he named it Repulse Bay. The coast then taking an easterly direction, he followed it till he came to a channel which, from the accumulation of ice at its entrance, he called the Frozen Strait. A current ran through it, which, however, appeared to him to be merely the one that had entered by Hudson's Straits, and proceeded circuitously round

Southampton Island. He returned home, expressing a decided conviction that no practicable passage existed in that direction.

Mr Dobbs, the mover of the expedition, was deeply disappointed by this result; and from his own reflections, and the statement of several of the inferior officers, became convinced that Middleton had given a very false and imperfect statement of the facts. Of this he so fully convinced both the Parliament and the nation, that L.10,000 was subscribed for a new expedition, and a reward of L.20,000 promised to the discoverers of the projected passage. Captains Moor and Smith, in 1746, commanded this armament, which, like many of those equipped with peculiar pomp and circumstance, entirely failed. They merely ascertained, what was pretty well known before, that the Wager afforded no passage; and, after spending a severe winter there, returned next season to England.

It appears, by notices which Mr Barrow has drawn from the Admiralty records, that the armed brig Lion was sent in 1776, under Lieutenant Pickersgill, and in 1777, under Lieutenant Young, with the view of acting in concert with Captain Cook, who, in his third voyage, might, it was hoped, make his way round from Behring's Straits into the Atlantic. These officers reached respectively the latitudes of 68° and 72°, without effecting or almost attempting any thing farther.

CHAPTER VII.

Recent Voyages for the Discovery of a North-west Passage.

Britain had seen other nations carry off all the great prizes in naval discovery. She had scarcely a vessel on the ocean, when the nations of the Iberian peninsula laid open new worlds, and appropriated the golden treasures of the east and of the west. Her energies being once roused, her efforts were from the beginning bold and adventurous, though sometimes made with inadequate means, on a small scale, and often with a disastrous issue. Advancing, however, with regular steps, she first rivalled and finally surpassed all other modern nations. The reigns of George III. and of his eldest son formed the era which decided both her maritime supremacy and her special eminence in the department of discovery. She achieved almost entirely the exploration of the vast expanse of the South Sea, with its great and numerous islands, leaving to the rival exertions of France only a scanty gleaning. The revolutionary war for some time attracted exclusively the attention and resources of the nation; but as soon as a series of signal triumphs had left Britain without an enemy to contend with in the seas of Europe, she looked again to this theatre of her former glory. Even amid the din of arms, the African Association pursued their enlightened and philanthropic course; and the important and brilliant issues to which it had led, finally induced the government to take an interest in this undertaking, and apply to it resources which no private body could command. Mr Barrow, who, by his personal observation, had illustrated some of the most important quarters both of this and of other continents, took the chief direction; prompting and guiding every step with an energetic perseverance and practical judgment which had never been extended in an equal degree to similar objects. The measures undertaken with respect to Africa, with their varied and eventful results, do not come within the compass of the present work. But when the spirit was once roused, it did not confine itself to a single point. The northern seas, as a theatre of adventure, had been unoccupied for half a century. There prevailed, indeed, a general impression, that so many expeditions undertaken in vain had set that great question at rest; but when Mr Barrow applied to it the powers of his vigorous and penetrating judgment, he became sensible that this conclusion was quite groundless. Baffin had once sailed round that great sea, which by him, and from him, was called a bay; but his examination had been quite superficial, and insufficient to establish that continuity of land with which the maps had so thoroughly enclosed it. There were even striking facts indicating that there was a communication with the Greenland sea on the one side and the Polar basin and the Pacific ocean on the other. Even in regard to Hudson's Bay, no progress had been made since Parliament had offered a reward of L.20,000, and sent out the large expedition under the Captains Moor and Smith. Thus the grand question in which the country had long taken so deep an interest was still open; and to decide it nothing more seemed necessary than that skill and undaunted courage, of which British seamen had shown themselves so eminently possessed.

In 1818, the Admiralty fitted out two expeditions; one destined for the discovery of the north-west passage, the other to attempt a voyage across the Pole. The first, which is the one we are at present to follow, consisted of the Isabella of 385 tons, commanded by Captain John Ross, an officer of reputation and experience, who had twice wintered in the Baltic, had been employed in surveying the White Sea, and been as far north as Bear or Cherie Island. Another vessel, the Alexander of 252 tons, was commanded by Lieutenant Parry, a young officer of rising merit, who has since amply justified the choice which was made by his employers.

On the 18th April the vessels dropped down the Thames, and by the end of the month were off the Shetland Islands. By the 27th May they came in view of Cape Farewell; round which, as usual, were floating numerous and lofty icebergs of the most varied forms and tints. On the 14th June they reached the Whale Islands, where they were informed by the governor of the Danish settlement, that the past winter had been uncommonly severe, the neighbouring bays and straits having been all frozen two months earlier than usual, and that some of the channels northward of his station were still bound in with the ice. A curious statement was here made, that the Esquimaux, by their own account, could see across the whole breadth of the bay, though not less than two hundred miles, which would be an extraordinary instance of the power of refraction; but the ice, it may be observed, often presents deceptive appearances of land. On the 17th June, in the neighbourhood of Waygat Island, an impenetrable barrier obliged the discoverers to stop their course, making themselves fast to an iceberg, and having forty-five whale-ships in company. Observations made on land proved this island to be misplaced on the maps by no less than five degrees of longitude. At length the ice attached to the eastern shore broke up, though still forming a continuous and impenetrable rampart at some distance to the westward, in which direction it had drifted; but in the intermediate space they were enabled to move forward slowly along the coast, labouring through narrow and intricate channels, amid mountains and loose fragments of ice. They steered their course, however, to the higher parts of the bay, and in about lat. 75° came to a coast which had not been visited by former navigators. They were struck, as Baffin had been, by the great number of whales which were slumbering securely in these deep recesses, never having been alarmed by the harpoon. On the 7th August, in the same latitude, a heavy gale sprung up, and, driving the ice against the vessels, made a display of its terrible and dangerous power. A trial of strength ensued between the ice and the ships; being dashed against each other with such force, that the anchors and cables were successively broken, and a boat, which could not be withdrawn from between their sterns, was crushed to pieces. Providentially, when instant destruction was expected, the icy mass receded, and the ships, owing to the extraordinary strength of their construction, escaped without material injury.

Proceeding along a high mountainous coast, the expedition came to a tribe of Esquimaux, who, of all human beings, seem to exist in a state of the deepest seclusion. They had never before seen men belonging to the civilized world, or of a race different from their own. The first small party whom the navigators approached showed every sign of the deepest alarm ; dreading, as was afterwards understood, a fatal influence from the mere touch of these beings of an unknown species. Yet they seem to have felt a secret attraction towards the strangers, and advanced, holding fast the long knives lodged in their boots, and looking significantly at each other. Having come to a chasm which separated them from the English, they made earnest signs that only Saccheous the interpreter,* who bore a certain resemblance to themselves, should come across.

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* This young man was a native of Greenland, who had accompanied the Thomas and Ann, Captain Newton, one of the Leith whalers, on her homeward voyage in 1816 ; and the following year he went out to the fishery, returning a second time to Europe. During this period, being intelligent and docile, he made no mean proficiency in a course of elementary study, in the prosecution of which he received every assistance from his friends in Leith. On the equipment of the Arctic expedition, his wishes to accompany the discovery-ships having been communicated to government through the medium of Captain Basil Hall, he was immediately engaged as interpreter. His services in that capacity, as the narrative shows, were of eminent utility ; and, on his return, the Admiralty, desirous to have him properly instructed, in the event of a future expedition, sent him to Edinburgh for that purpose. Here, however, in the ensu-

He went forward and offered his hand. They shrunk back for some time in alarm ; at length the boldest touched it, and, finding it flesh and blood, set up a loud shout, which three others joined. The rest of the party then came up, to the number of eight, with 50 dogs, which joined with their masters in raising a tremendous clamour. Ross and Parry now thought it time to come forward. This movement excited alarm, and a tendency to retreat ; but Saccheous having taught these officers to pull their noses, this sign of amity was graciously accepted. A mirror was now held up to them, on seeing their faces in which they showed the most extreme astonishment ; they looked round on each other a few moments in silence, then set up a general shout, succeeded by a loud laugh of delight and surprise. The ship was then the next object of their speculation. They began by endeavouring to ascertain its nature by interrogating itself ; for they conceived it to be a huge bird spreading its vast wings, and endowed with reason. One of them, pulling his nose with the utmost solemnity, began an address, "Who are you ? Whence come you ? Is it from the sun or the moon ?" The ship remaining silent, they at length applied to Saccheous, who assured them that it was a frame of timber, the work of human art. To them, however, who had never seen any wood but slight twigs and stunted heath, its immense planks and masts were objects of amazement. What animal, they also asked, could furnish those enormous *skins* which were spread for the sails. Their admiration

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ing spring, he was unfortunately attacked with an inflammatory fever, which carried him off in a few days.

was soon followed by a desire to possess some of the objects which met their eyes, but with little ceremony or discrimination as to the means of effecting their end. They attempted first a spare topmast, then an anchor; and these proving too ponderous, one of them tried the smith's anvil; but, finding it fixed, made off at least with the large hammer. Another wonder for them was to see the sailors mounting to the topmast; nor was it without much hesitation that they ventured their own feet in the shrouds. A little terrier dog appeared to them a contemptible object, wholly unfit for drawing burdens or being yoked in a sledge, while the grunt of a hog filled them with alarm.

This tribe, in features, form, and even language, belong evidently to the Esquimaux,—a race widely diffused over all the shores of the Arctic ocean. They appear to have little or no communication with the rest, and amid the general resemblance have some distinguishing characters. The boat, large or small, which we almost instinctively associate with our idea of the Greenlander, is here wholly unknown. Much of their food is found within the deep, but is procured merely by walking over the icy surface, which incrusts it during the greater part of the year. Yet they have one important advantage, not only over other Esquimaux, but over the most civilized of the native Americans. The country affords iron, which, being flattened by sharp stones, and inserted in a handle made of the horn of the sea-unicorn, forms knives much more efficient than those framed of bone by the neighbouring hordes. Again, unlike the other tribes, they have a king, who rules seemingly with gentle sway;

for they described him as strong, very good, and very much beloved. The discoverers did not visit the court of this Arctic potentate; but they understood that he drew a tribute, consisting of train-oil, seal-skins, and the bone of the unicorn. Like other Greenlanders, they had sledges drawn by large and powerful teams of dogs; their chase was chiefly confined to hares, foxes of various colours, the seal, and the narwal. They rejected with horror the perverted luxuries of biscuit, sweetmeats, or spirits; train-oil, as it streamed from the seal and the unicorn, alone gratified their palate. Captain Ross, swayed by national impressions, gave to this tribe the name of *Arctic Highlanders*.

In the northern part of this coast the navigators observed a remarkable phenomenon,—a range of cliffs, the snowy covering of which had exchanged its native white for a tint of dark crimson. This red snow was not only examined on the spot, but a portion of it was brought to England, and was analyzed by the most learned men both at home and abroad, who have entertained various opinions as to the origin of the colour. The latest observations, as elsewhere observed, have established its vegetable origin.

Having now passed Cape Dudley Digges, Captain Ross found himself among those spacious sounds which Baffin had named, but so imperfectly described. He seems, however, to have followed the same hasty method. On looking up an inlet or opening, and seeing it, at whatever distance, apparently closed by land, he pronounced it at once a bay, and deemed farther investigation superfluous. Too much importance seems also to have been attached to barriers of ice, which in many cases were only temporary. He sailed past Wolstenholme and Whale Sounds very quickly, without approaching even their entrance; concluding them to be blocked up with ice, and to afford no hope of a passage. As these openings stretched towards the north, it must be admitted that they could not in this high latitude be considered very favourable as to a western route. He came next to Sir Thomas Smith's Sound, which we may recollect Baffin to have described as the most spacious and promising in the whole circuit of these coasts. It was viewed with greater attention; but Captain Ross considered himself as having distinctly seen it, at the distance of eighteen leagues, completely enclosed by land. The space appears too great for so positive an inference, and the belief that ice barred its entrance seems to have been adopted on very slight grounds. He came next to a spacious bay, which had hitherto been unknown and unobserved, —afterwards to that which Baffin had called Alderman Jones's Sound; but in respect to both, the ice at their entrance, and the apparent boundary of high land in the interior, led, as in the other instances, to a prompt and unfavourable conclusion.

The season was now somewhat advanced, the end of August approached, the sun set after a perpetual day of two months and a half, and a thick fog rendered the lengthening nights more gloomy. The land, seen at some distance, consisted of very high and steep mountains, presenting, however, some spots fit for human habitation. An opening, forty-five miles wide, to the southward of a promontory which was named Cape Charlotte, was decided against in the usual summary manner. On the

30th August, the expedition came to a most magnificent inlet, bordered by lofty mountains of peculiar grandeur, while the water, being clear and free from ice, presented so tempting an appearance that it was impossible to refrain from entering. This channel, which soon proved to be the Lancaster Sound of Baffin, was ascended for thirty miles; during which run officers and men crowded the topmast, filled with enthusiastic hope, and judging that it afforded much fairer hopes of success than any of those so hastily passed. Captain Ross, however, and those whom he consulted, never showed those sanguine expectations. He soon thought that he discovered a high ridge stretching directly across the inlet; and though a great part of it was deeply involved in mist, yet a passage in this direction was judged to be hopeless. The sea being open, however, the commander proceeded; but about twelve o'clock Mr Beverley, the assistant-surgeon, came down from the crow's nest, stating, that he had seen the land stretching very nearly across the entire bay. Hereupon, it is said, all hopes were renounced, even by the most sanguine, and Captain Ross sailed onward merely for the purpose of making some magnetical observations.

At three o'clock, the sky having cleared, the commander himself went on deck, when he states that he distinctly saw across the bottom of the bay a chain of mountains continuous and connected with those which formed its opposite shores. The weather then becoming unsettled, he made the signal to steer the vessels out of Lancaster Sound. Lieutenant Parry, however, declares that to him, in the Isabella, this signal appeared altogether mysterious, being himself full of the most sanguine expectations, and seeing no ground whatever for this abrupt retreat; but his duty obliged him to follow.

On regaining the entrance of this great channel, Captain Ross continued to steer southward along the western shore of Baffin's Bay and Davis's Strait, without seeing any entrance which afforded equal promise. Cumberland Strait alone was similar in magnitude; but it could lead only into the higher latitudes of Hudson's Bay, and afforded thus little chance of a free passage into the Arctic sea. After surveying, therefore, some of these shores, he returned home early in October.

The Captain arrived in England under the most decided conviction, that Baffin's observations had been perfectly correct, and that Lancaster Sound was a bay, affording no entrance into any western sea. If even any strait existed between the mountains, it must, he conceived, be for ever innavigable on account of the ice with which it is filled. The intelligent individuals, however, who had fitted out the expedition with such zeal and on so great a scale, felt deep dissatisfaction both at this conclusion and at the premises from which it had been drawn. The grounds, in particular, on which Lancaster Sound, an opening so noble and so spacious, and in a position so favourable in respect to western discovery, had been so abruptly quitted, appeared wholly inadmissible. The same opinion was very decidedly espoused by several of the officers, and especially by Lieutenant Parry, who was second in command, but had never been consulted on the occasion, and who declared the relinquishment of all attempt at discovery at that crisis to be in his eyes completely unaccountable. It was determined, in short, that a fresh expedition should be equipped and intrusted to Mr Parry, that he might fulfil, if possible, his own sanguine hopes and those of his employers. He was furnished with the Hecla of 375 tons, and a crew of fifty-eight men; and with the Griper gun-brig of 180 tons, and thirty-six men, commanded by Lieutenant Liddon. These ships were made as strong and as well-fitted as possible for the navigation of the Arctic seas; and were stored with ample provisions for two years, a copious supply of antiscorbutics, and every thing which could enable the crews to endure the most extreme rigours of a Polar winter.

Lieutenant Parry, destined to outstrip all his predecessors in the career of Arctic discovery, weighed anchor from the Nore on the 11th May, (1819,) and on the 20th rounded the most northerly point of the Orkneys. He endeavoured to cross the Atlantic about the parallel of 58°, and though impeded during the first fortnight of June by a series of unfavourable weather, obtained on the 15th, from the distance apparently of not less than forty leagues, a view of the lofty cliffs composing Cape Farewell. On the 18th the ships first fell in with icebergs, the air being also filled with petrels, kittiwakes, terns, and other winged inhabitants of the northern sky. Parry now made an effort to push north and west, through the icy masses, in the direction of Lancaster Sound; but these suddenly closed upon him; and on the 25th the two ships were so immoveably beset, that no power could turn their heads a single point of the compass. The vessels remained thus fixed, but safe, when, on the morning of the second day, a heavy roll of the sea loosened the ice, and drove its masses against them with such violence, that only their very strong construction saved them from severe injury. The discoverers therefore were fain to extricate themselves as soon as possible; and, resigning the idea of reaching Lancaster Sound by the most direct route, began to coast northward along the border of this great icy field, till they should find open water. In this progress they verified the observation of Davis, that in the narrowest part of the great sea, misnamed his Strait, the shores on each side could be discovered at the same moment. Thus they proceeded, till they reached the Women's Islands and Hope Sanderson, in about latitude 73°. As every step was now likely to carry them farther from their destination, Parry determined upon a desperate push to the westward. Favoured with a moderate breeze, the ships were run into the detached pieces and floes of ice, through which they were heaved with hawsers; but the obstacles became always heavier, till they were completely beset, and a heavy fog coming on, made them little able to take advantage of any favourable change. Yet in the course of a week, though repeatedly and sometimes dangerously beset, they warped their way from lane to lane of open water, till only one lengthened floe separated them from a wide open sea to the westward. By laboriously sawing through this obstruction, they were able to penetrate finally the great icy barrier, and saw the western shore, clear of ice, extending before them.

The navigators now bore directly down upon Lancaster Sound, and on the 30th July found themselves at its entrance. They felt an extraordinary emotion as they recognised this magnificent channel, with the lofty cliffs by which it was guarded, aware that a very short time would decide the fate of their grand undertaking. They were tantalized, however, by a fresh breeze coming directly down the Sound, which suffered them to make only very slow progress. There was no appearance, however, of obstruction either from ice or land, and even the heavy swell which came down the inlet, driving the water repeatedly in at the stern-windows, was hailed as an indication of open sea to the westward. The Hecla left the Griper behind, but still without making any great way herself till the 3d August, when an easterly breeze sprung up, carrying both vessels rapidly forward. A crowd of sail was set, and they pushed triumphantly to the westward. Their minds were filled with anxious hope and suspense. The mast-heads were crowded with officers and men, and the successive reports brought down from the topmast pinnacle, called the crow's nest, were eagerly listened to. Their course was still unobstructed. They passed various headlands, with several wide openings towards the north and south, which they hastily named Croker Bay, Navy Board Inlet, &c.; but these it was not their present object to explore. The wind, freshening more and more, carried them happily forward, till at midnight they found themselves in longitude 83° 12′, nearly a hundred and fifty miles from the mouth of the grand inlet, which still retained a breadth of fifty miles. The success of the expedition, they fondly hoped, was now to a great extent decided.

The Hecla at this time slackened her course to allow her companion to come up, which she did in longitude 85°. They together proceeded to longitude 86° 30′, and found two other inlets, which they named Burnet and Stratton; then a bold cape named Fellfoot, forming apparently the termination of this long line of coast. The lengthened swell which still rolled in from the north and west, with the oceanic colour of the waters, inspired the flattering hope that they had already passed the region of straits and inlets, and were now wafted along the wide expanse of the Polar basin. Nothing, in short, it was hoped, would henceforth obstruct their progress to Icy Cape, the western boundary of America. An alarm of land was given, but it proved to arise only from an island of no great extent. However, more land was soon discovered beyond Cape Fellfoot, which was ascertained to be the entrance to a noble bay, extending on their right, which they named Maxwell Bay. An uninterrupted range of sea still stretched out before them, though they were somewhat discomposed by seeing on the south a line of continuous ice; but it left an open route before them, and they hoped to find it merely a detached stream. A little space onwards, however, they discovered, with deep dismay, this ice to be joined to a compact and impenetrable body of floes, which completely crossed the channel, and joined the western point of Maxwell Bay. It behoved them, therefore, immediately to draw back, to avoid being embayed in ice, along the edges of which a violent surf was then beating. The officers began to amuse themselves with fruitless attempts to catch white whales, when the weather cleared, and they saw to the south an open sea with a dark water-sky. Parry, hoping that this might lead to a free passage in a lower latitude, steered in this direction, and found himself at the mouth of a great inlet, ten leagues broad, with no visible termination; and to the two capes at its entrance he gave the names of Clarence and Seppings.

The mariners, finding the western shore of this inlet deeply encumbered with ice, moved across to the eastern, where they found a broad and open channel. The coast was the most dreary and desolate they had ever beheld even in the Arctic world, presenting scarcely a semblance either of animal or vegetable life. Navigation was rendered more arduous from the entire irregularity of the compass, now evidently approaching to the magnetic pole, and showing an excess of variation which they vainly attempted to measure, so that the binnacles were laid aside as useless lumber. They sailed a hundred and twenty miles up this inlet, and its augmenting width inspired them with corresponding hopes; when, with extreme consternation, they suddenly perceived the ice to diverge from its parallel course, running close in with a point of land which appeared to form the southern extremity of the eastern shore. To this foreland they gave the name of Cape Kater. The western horizon also appeared covered with heavy and extensive floes, a bright and dazzling ice-blink extending from shore to shore. The name of the Prince Regent was given to this spacious inlet, which Parry strongly suspected must have a communication with Hudson's Bay. He now determined to return to the old station, and watch the opportunity when the relenting ice would allow the ships to proceed westward. That station was reached not without some difficulty, amid ice and fog. At Prince Leopold's Islands, on the 15th, the ice was as impenetrable as ever, with a bright blink, and from the top of a high hill there was no water to be seen; luckily also there was no land. On the 18th, on getting once more close to the northern shore, the navigators began to make a little way, and some showers of rain and snow, accompanied with heavy wind, produced such an effect, that on the 21st the whole ice had disappeared, and they could scarcely believe it to be the same sea which had just before been covered with floes upon floes as far as the eye could reach.

Mr Parry now crowded all sail to the westward, and, though detained by want of wind, he passed Radstock Bay, Capes Hurd and Hotham, and Beechy Island; after which he reached a fine and broad inlet leading to the north, to which he assigned Wellington, the greatest name of the age. The sea up this inlet being perfectly open, he would not have hesitated to ascend it, had there not been before him, along the south coast of an island named Cornwallis, an open channel leading in a direction which, being due west, he could have no hesitation in preferring. Wellington Inlet was now considered by the navigators, so high were their hopes, as forming the western boundary of the land stretching from Baffin's Bay to the Polar sea, into which they had little doubt they were entering. For this reason Captain Parry did not hesitate to give to the great channel, which had effected so desirable a junction, the merited appellation of Barrow's Strait, after the much-esteemed promoter of the expedition. A favourable breeze now sprung up, and the adventurers passed gaily and triumphantly along the extensive shore of Cornwallis Island, then coasted a larger island named Bathurst, and next a smaller one called Byam Martin. At this last place they judged, by some experiments, that they had passed the magnetic meridian, situated, probably, in about 100 degrees west longitude, and where the compass would have pointed due south instead of due north. The navigation now became extremely difficult, in consequence of thick fogs, which not only froze on the shrouds, but, as the compass was also useless, took away all means of knowing the direction in which they sailed. They were obliged to trust to the land and ice preserving the same line, and sometimes employed the most odd expedients for ascertaining the precise point. They encountered also a compact floe of ice, through which they were obliged to bore their way by main force. Through all these obstacles they reached the coast of an island larger than any before discovered, to which they gave the name of Melville. The wind now failed, and they slowly moved forward by towing and warping, till, on the 4th September, Mr Parry could announce to his joyful crew, that, having reached the longitude of 110° W. they were become *entitled to the reward of £5000, promised by* Parliament to the first crew who should attain that meridian. The mariners pushed forward with redoubled ardour, but soon found their course arrested by an impenetrable icy barrier. They waited nearly a fortnight in hopes of overcoming it; till about the 20th their situation became alarming. The young ice began rapidly to form on the surface of the waters, retarded only by winds and swells; so that Captain Parry was convinced, in the event of a single hour's calm, that he would be frozen up in the midst of the sea. No option was therefore left but to return, and to choose between two apparently good harbours, which had been recently passed on Melville Island. Not without difficulty he reached this place by the 24th, and made choice of the most western harbour, as that alone which afforded full security; but it was necessary to cut two miles through a large floe with which it was filled. To effect this arduous operation, the seamen marked with boarding-pikes two parallel lines, at the distance of somewhat more than the breadth of the larger ship. They sawed along these two lines, and then by cross-sawings detached large pieces, which were separated diagonally in order to be floated out; and sometimes boat-sails were fastened to them to take the advantage of a favourable breeze. On the 26th the ships were established in five fathoms water, at about a cable's length from the beach. For some time the ice was daily cleared round them; but this was soon found an endless and useless labour, and they were allowed to be regularly frozen in for the winter.

Mr Parry then applied himself to name the extended group of large islands along which he had passed. *He called them at first New Georgia;* but, recollecting that this appellation had been pre-occupied by a large island in the Pacific, he gave the name of "the North Georgian Islands" after his majesty George III., whose reign had been so eminently distinguished by the extension of nautical and geographical knowledge.

The commander, finding himself and his ships shut in for a long and dreary winter, devoted his attention, with judicious activity and a mixture of firmness and kindness, to mitigate those evils which, even in lower latitudes, had often rendered an Arctic wintering so fatal. His provisions being very ample, he allowed the sailors weekly a pound of Donkin's preserved meat, and a pint of concentrated soup, instead of a pound of salt beef; beer and wine were served instead of spirits; and a certain allowance was made of sour-krout, pickles, and vinegar. The sailors were also called together daily, and made to swallow a quantity of lime-juice and sugar in presence of the officers, their improvidence being such as to afford otherwise no hope of their spontaneously imbibing this salutary draught. Their gums and shins were also regularly examined, in order to detect scurvy in its earliest symptoms. It was necessary to be very economical of fuel, the small quantity of moss and turf which could be collected being too wet to be of any use. By placing the apparatus for baking in a central position, and by several other arrangements, the cabin was maintained in a very comfortable temperature; but still, around its extremities and in the bed-places, steam, vapour, and even the breath, settled, first as moisture and then as ice; to dry and remove these annoyances became therefore a part of their daily employment.

Mr Parry was, from the first, aware that nothing acted more strongly as an antiscorbutic, than to keep the men's minds in a lively and cheerful state. His plans for this purpose were very original, and proved very effectual. Arrangements were made for the occasional performance of a play, in a region very remote certainly from any to which the drama appeared congenial. Lieutenant Beechey was nominated stage-manager, and the officers came forward as amateur performers. The very expectation thus raised among the seamen, and the bustle of preparing a room for the purpose, were extremely salutary; and when the North Georgian theatre opened with "Miss in her Teens," these hardy tars were convulsed with laughter, not a little excited, perhaps, by viewing their officers in so singular and novel a position; at all events, the Arctic management was extremely popular. As the small stock contained in one or two chance volumes was exhausted, original compositions were produced, and afterwards formed into a little collection. The officers had another source of amusement in the North Georgia Gazette, of which Captain Sabine became editor, and all were invited to contribute to this chronicle of the frozen regions. Even those who hesitated to appear as writers, enlivened the circle by severe but good-humoured criticisms:

> Thus passed the time,
> Till, through the lucid chambers of the south,
> Looked out the joyous *Sun*.

It was on the 4th November that this great orb ought to have taken his leave; but a deep haze prevented them from bidding a formal farewell, and from ascertaining the period down to which refraction would have rendered him visible; yet he was reported to be seen from the mast-head on the 11th. Amid various occupations and amusements, the shortest day came on almost unexpected, and the seamen then watched with pleasure the mid-day twilight gradually strengthening. On the 28th January none of the fixed stars could be seen at noon by the naked eye; and on the 1st and 2d of February the sun was looked for, but the sky was wrapped in mist; however, on the 3d he was perceived from the maintop of the Hecla. Through the greatest depth of the Polar night, the officers, during the brief twilight, had taken a regular walk of two or three hours; avoiding only to go farther than a mile, lest they should be overtaken by snow-drift. There was a want of objects to diversify this walk. A dreary monotonous surface of dazzling white covered land and sea; the view of the ships, the smoke ascending from them, the sound of human voices, which through the calm and cold air was carried to an extraordinary distance, alone gave any animation to this wintry scene. The officers, however, persevered in their daily walk, and exercise was also enforced upon the men, who, even when prevented by the weather from leaving the vessel, were made to run round the deck, keeping time to the tune of an organ. This movement they did not at first entirely relish; but no plea against it being admitted, they converted it at last into matter of frolic.

By the above means health was maintained on board the ships to a surprising degree. Early in January, however, Mr Scallon, the gunner, felt symptoms, first in the legs and then in the gums, that decidedly indicated the presence of scurvy, of which the immediate cause appeared to be the great collection of damp which had formed around his bed-place. At this first alarm, all the antiscorbutics on board, lemon-juice, pickles, spruce-beer, &c., were put into requisition; a small quantity of mustard and cress was also raised from mould placed over the stove-pipe; and such was the success of these measures, that in nine days the patient could walk without pain. Farther on in the season a number of slighter cases occurred, which were somewhat aggravated by an accident. As the men were taking their musical perambulation round the deck, a house erected on shore, and containing a number of the most valuable instruments, was seen to be on fire. The crew instantly ran, pulled off the roof with ropes, knocked down a part of the sides, and being thus enabled to throw in large quantities of snow, succeeded in subduing the flames. Now, however, their faces presented a curious spectacle, every nose and cheek being white with frost-bites, while the medical gentlemen, with their assistants, were obliged to run from one to the other, and rub them with snow, in order to restore animation. With one man the amputation of several of his fingers became necessary, and no less than sixteen were added to the sick-list.

The animal tribes disappeared early in the winter from this frozen region. The officers, on the 15th October, made a shooting excursion, enjoying a very fine day, though with the thermometer 47° below the freezing-point; but they did not find a deer, a grouse, or any animal which could be ranked as game. All of them deserting this wintry realm, had crossed the seas to America. There remained only a pack of wolves, which serenaded the crews nightly, not venturing to attack, but contriving to avoid being captured. A beautiful white fox was caught and made a pet of. On the 12th May one of the men gave notice that he had seen a ptarmigan; and attention being thus excited, Mr Beverley next day brought one down, and on the 15th three coveys were discovered. The footsteps of deer were also seen, which, from the impression made on the snow, seemed to be moving northwards. From this time ptarmigans were supplied in tolerable numbers; but they were made strictly a common good, being divided equally among the crew, with only a preference in favour of the sick. There was found, also, mixed with moss under the snow, an abundance of the herb sorrel, a most potent antidote against scurvy.

By these supplies, and by the more genial weather, the health of the crew, which at the end of March had been in a somewhat alarming state, was completely restored before the beginning of June. In extending their excursions, however, they were considerably incommoded by that distressing inflammation of the eyes, produced from the glare of snow, called snow-blindness. It was cured in a few days by cold applications, and it was prevented in future by covering the eyes, or by wearing spectacles, in which crape was used instead of glass.

On the 16th March the North Georgian theatre was closed with an appropriate address, and the general attention was now turned to the means of extrication from the ice. By the 17th May the seamen had so far cut the ice from around the ships as to allow them to float; but in the sea it was still immoveable. This interval of painful inaction was employed by Captain Parry in an excursion across Melville Island. The ground was still mostly covered with softened snow, and even the cleared tracts were extremely desolate, though chequered by intervals of fine verdure. Deer were seen traversing the plains in considerable numbers. To the north appeared another island, to which was given the name of Sabine. By the middle of June pools were everywhere formed; the dissolved water flowed in streams, and even in torrents, which rendered hunting and travelling unsafe. There were also channels of water in which boats could pass; yet throughout June and July the great covering of ice in the surrounding sea remained entire, and kept the ships in harbour. On the 2d of August, however, the whole mass, by one of those sudden movements to which it is liable, broke up and floated out; and the explorers had now open water in which to prosecute their discovery. It was consolatory to think, that this was the very season at which they had last year entered Lancaster Sound; and if they could make as brilliant a voyage this summer, the following one would see them not far from Behring's Straits. But it was not without some obstructions that on the 4th they reached the same spot where their progress had been formerly arrested. On the 15th they were enabled to make a certain progress; after which the frozen surface of the ocean assumed a more compact and impenetrable aspect than had ever before been witnessed. The officers ascended some of the lofty heights which bordered the coast; but, in a long reach of sea to the westward, no boundary was seen to these icy barriers. There appeared only the western extremity of Melville Island, named Cape Dundas; and in the distance a bold high coast, which they named Banks's Land. As even a brisk easterly gale did not produce the slightest movement in this frozen surface, they were led to believe that on the other side there must be a large barrier of land, by which it was held in a fixed state. On considering all circumstances, there appeared no alternative but to make their way homeward while yet the season permitted. Some additional observations were made on their return, on the two coasts extending along Barrow's Strait.

Mr Parry's arrival in Britain was hailed with the highest exultation. To have sailed upwards of thirty degrees of longitude beyond the point reached by any former navigator,—to have discovered so many new lands, islands, and bays,—to have established the much-contested existence of a Polar sea north of America,—finally, after a wintering of eleven months, to have brought back his crew in a sound and vigorous state,*—were enough to raise his name above that of any former Arctic voyager.

No hesitation was felt as to sending out another expedition; but, considering the strength of the ultimate barriers which had twice arrested the progress of the last, it became important to consider whether there was not any other channel by which the Polar sea, now ascertained to exist, might be reached and traversed with greater facility. In Hudson's Bay, neither of the great northern sounds of the Welcome nor of Fox's Channel had been traced to a termination. Middleton, in the former inlet, had ascended higher than any other navigator; but a thick cloud had been raised around his reputation, and his *Frozen Strait*, after all, was very likely to be only a temporary barrier. If from either of these sounds a passage should open into the Polar sea, it might be navigated in a much lower latitude than that in which Parry had wintered, and might perhaps be also free from those large insular masses in which he had been entangled. There was fitted out then a new expedition, in which the Fury, of 327 tons, was conjoined with the Hecla; the commander conceiving that two vessels of nearly equal dimensions were best calculated for co-operating with and aiding each other, while the examination of coasts and inlets could best be carried on by boats. This officer, now promoted to the rank of captain, hoisted his flag on board the Fury; while

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* Only one man died in the course of their long and perilous voyage, but whose decease was no way referable to a connexion with the expedition, the origin of his malady having been of a date anterior to the sailing of the ships.

Captain Lyon, already distinguished by his services in Africa, received the command of the Hecla, and proved himself fully competent to the arduous duties of this new service. The equipment, the victualling, and the heating of the vessels, were all arranged with the greatest care, and with various improvements suggested by experience.

The expedition was ready to sail on the 8th May, 1821, and having then quitted the Nore, passed through the Pentland Frith and by Cape Farewell, suffering repeated detention ; but we shall not pause till we find it on the 2d July at the mouth of Hudson's Straits. Captain Parry, accustomed as he was to scenes of Polar desolation, was struck with the peculiarly dreary aspect which these shores presented. The naked rocks, the snow still covering the valleys, and the thick fogs that hung over them rendered the scene indescribably gloomy. The ships were soon surrounded by icebergs, which in one place amounted to the number of fifty-four,—one rising 258 feet above the sea. They were attended by large floes, rendered very formidable by their rotatory motion. The peculiar danger of these straits, often remarked by former navigators, arises from the strong tides and currents that rush in from the Atlantic, and cause continual and violent movements among the huge icy masses with which the channels are filled. Captain Lyon had proof of their strength when he had two hawsers repeatedly carried away, and his best bower-anchor, weighing more than a ton, wrenched from the bows, and broken off as if it had been crockery ware. Amid these troubles, the sailors were amused by the sight of three companion-ships, two belonging to the Hudson's Bay Company, and one bringing out settlers for Lord Selkirk's colony. These last, who were chiefly Dutch and Germans, were seen waltzing on deck often for hours together, and were only driven in by a severe fall of snow. Although almost in despair at the numerous detentions they had experienced, they recreated themselves from time to time by matrimonial arrangements, in which they were so diligent, that, it is said, there was scarcely a ball which did not end in a marriage.

Amid these obstructions, the ships spent nineteen days in making seventy miles; which course, however, brought them, on the 21st, within two leagues of what are called the Savage Islands. On the following afternoon a loud shouting was heard over the ice, and soon after there appeared a numerous band of natives, paddling their canoes through the lanes of open water, or, where these failed, drawing them over the pieces of ice. Among a great number of *kayaks*, or boats rowed by a single man, (see plate, p. 181,) were five *oomiaks*, or women's boats, constructed of a frame-work of wood and whalebone, covered with deer-skins, having flat sides and bot-

tom, and of considerable size. One of them, 25 feet by 8, contained women, boys, and children, to the number of twenty-one. Presently began a wild, merry, noisy scene of frolic and traffic. The natives carried it on with eagerness and even fury, stripping themselves of the very skins which formed their only covering, till they were in a state of total nudity, except that the ladies always made a laudable reservation of their breeches. They drove what they meant should be an excessively hard bargain; yet, being wholly ignorant of the value of the rich skins with which nature has invested the animals of this Arctic climate, they raised shouts of triumph when they obtained in exchange a nail, a saw, or a razor. Their aspect was wilder and more dishevelled than that of any other tribe even among this rude race; their character also seems fiercer and more savage; and indeed it is in this quarter that most of the tragical encounters with Esquimaux have occurred. Some of the ancient dames were pronounced to be the most hideous objects that mortal eye had ever beheld; inflamed eyes, wrinkled skin, black teeth, and deformed features, rendered them scarcely human: hence much apology was found for the dark and dire suspicions cherished by Frobisher's crew respecting one of these damsels, and the odd investigation to which it had prompted. The children were rather pretty; though, from being thrown carelessly into the bottom of the boats, they had much the appearance of the young of wild animals. Besides traffic, the natives carried on a great deal of rather rude frolic, like that of ill-regulated schoolboys. One of them got behind a sailor, shouted loudly in one ear, and gave him a hearty box on the other, which was hailed with a loud and general laugh. They also carried on a dance, consisting chiefly of violent leaping and stamping, though in tolerable time.

In spite of every obstruction, Captain Parry, early in August, reached the entrance of Fox's Channel, and came in view of Southampton Island. It was now the question, whether to sail directly up this channel, and reach, by a comparatively short route, Repulse Bay and the higher latitudes, or to make the south-western circuit of Southampton Island, and ascend the beaten track of the Welcome. Captain Parry judiciously preferred the former, notwithstanding its uncertainties, on account of the great time which would be saved should this course be found practicable. On the 15th he came to a strait stretching westward, and apparently separating the island from other land on the north. Hoping to find this the Frozen Strait of Middleton, he entered it; but it soon proved a spacious and beautiful basin, enclosed by land on every side. He named it the Duke of York's Bay, and considered it one of the finest harbours in the world; but, after admiring a large floe covered entirely with minerals, shells, and plants, he moved out of it, and pursued the voyage. On the 21st the navigators found themselves in another strait, not much encumbered with ice, but darkened by thick fogs; and, before they almost knew where they were, a heavy swell from the southward showed that they had passed through the Frozen Strait, and were in the broad channel of the Welcome. They speedily entered Repulse Bay, in which modern speculation had cherished the hope of a passage; but a short investigation made by boats in every direction proved, that it was really as Middleton had described it, completely enclosed. A good deal of time had thus been lost through the scepticism so unjustly attached to the narrative of that eminent navigator.

Captain Parry, having come with all speed out of Repulse Bay, began the career of discovery along a coast hitherto unknown. An inlet was soon found, and called by the name of Gore; but when ascended a certain length, it was not found to reach far inland. At the mouth of this opening, the valleys were richly clad with grass and moss, the birds singing, butterflies and other insects displaying the most gaudy tints, so that the sailors might have fancied themselves in some happier climate, had not the mighty piles of ice in the Frozen Strait told a different tale. Hunting parties traversed the country in various directions, and the game-laws of the preceding year were strictly re-enacted, by which every beast or bird slain was to be employed for the general good, allowing only the head and legs as a *douceur* to the captor. The latter, however, adopted and made good a theory, agreeably to which the description *head* was greatly extended, so as to include even several joints of the back-bone.

Having passed Gore Inlet, the expedition found itself among those numerous isles described by Middleton, which formed a complete labyrinth of various shapes and sizes, while strong currents setting between them in various directions, amid fogs and drifting ice, rendered the navigation truly perilous. The Fury was assailed by successive masses rushing out from an inlet; her anchor was dragged along the rocks with a grinding noise, and on being drawn up, the two flukes were found to be broken off. The same vessel was afterwards carried along by a violent current, amid thick mist, without there being any means of guiding or altering its direction; so that Captain Parry considers it altogether providential that she was not dashed to pieces against the surrounding rocks. However, one channel, and one only, was found, by which the mariners at last made their way through this perilous maze. No sooner had they reached the open sea, than, being obliged to run before a strong northerly breeze, they were much disheartened to find themselves, on the 3d of September, at the very point which they had left the preceding 6th of August. All the interval had been employed in the mere negative discovery, that there was nothing to discover.

Captain Parry soon reached the northern coast, and resumed his task, which was rendered very tedious by the necessity of examining every opening and channel, in the hope that each might prove the desired passage into the Polar ocean. He first explored a large inlet, the name of which he gave to Captain Lyon, then a smaller one, which was named from Lieutenant Hoppner; and, by connecting these with Gore Inlet, he completed his delineation of the coast. The seamen had then the pleasure of opening a traffic with a party of Esquimaux, whose first timidity was soon overcome by the hope of being supplied with some iron tools. In the course of this transaction, the surprise of the crew was roused by the conduct of a lady, who had sold one boot, but obstinately retained the other in disregard of the strongest remonstrances as to the ridiculous figure she in consequence made. At length suspicion rose to such a pitch, that, all courtesy being set aside, her person was laid hold of, and the boot pulled off. Then indeed it proved a complete depository of stolen treasure, since no less than two spoons and a pewter plate were found within this capacious receptacle.

The end of September now approached, and Captain Parry found himself suddenly in the depth of winter. Snow had been falling during the whole of the short summer; but the united warmth of the air and earth had melted it as it fell, and left the ground still open to the sun's rays. In one moment, as it were, the snow made good its lodgment, and spread its white and dazzling mantle over land and sea. The rays being then no longer able to reach the soil, the whole became subject to permanent and impenetrable frost. Some parts of the snow were indeed dissolved, and then refrozen in varied and beautiful forms of crystallization; whereas at Melville Island the dead white covering once spread over nature had never changed its aspect. A more serious symptom existed in the rapid formation of the soft or pancake ice on the surface of the deep. The obstacle presented by this crust was at first so slight as to be scarcely felt by a ship before a favouring gale; but it continually increased, till the vessel, rolling from side to side, and all her resources failing, became, like Gulliver, bound by the feeble hands of Lilliputians. At the same time the various pieces of drift-ice, which were tossing in the sea without, had been cemented into one great field called "the ice," that threatened every moment to bear down upon the vessels, and dash them in pieces. Under this combination of circumstances, the navigators could no longer even attempt to reach the land, but determined to saw into the heart of a large adjoining floe, and there take up their winter-quarters. There was about half a mile to penetrate, which, in the present soft state of the pancake ice, was not very laborious. It was, however, far from pleasant, the ice bending like leather beneath their feet, and causing them sometimes to sink into the water, whence they did not escape without a very cold bath.

Captain Parry was now frozen up for another winter in the midst of the northern sea, and he forthwith applied himself to make the necessary arrangements with that judicious foresight which had been already so conspicuous in the same trying circumstances. Through lessons taught by experience, and by several ingenious contrivances, the ships were much more thoroughly heated than in the former voyage; the provisioning, too, was more ample, and antidotes against scurvy still more copiously supplied. The Polar theatre opened on the 9th November with "The Rivals." Captains Parry and Lyon volunteered to appear as Sir Anthony and Captain Absolute; while the ladies had very generously removed an ample growth of beard, disregarding the comfortable warmth which it afforded in an Arctic climate. The company were well received, and carried through their performances with unabated spirit; yet this season does not seem to have gone off quite with the same eclat as the preceding. Novelty, from the first the chief attraction, had worn off, and the discomfort of a stage, the exhibitions of which were attended with a cold thirty degrees under the freezing-point, became rather severe. The sailors found for themselves a more sober and useful, as well as efficacious remedy against *ennui.* They established a school, in which the better instructed undertook to revive the knowledge of letters among others who had almost entirely lost the slight tincture which they had once imbibed. These hardy tars applied themselves to their book with ardent and laudable zeal, and showed a pride in their new attainments like that of little boys at school. By Christmas sixteen well-written copies were forthcoming from those who, two months before, could scarcely form a letter. Amid these varied and pleasing occupations, the shortest day passed over their heads almost unobserved, especially as the sun never entirely left them. Captain Lyon never saw a merrier Christmas than was celebrated on board. The sailors, being amply regaled with fresh beef, cranberry pies, and grog, became so extremely elevated, that they insisted on successively drinking, with three hearty cheers, the health of each officer.

The animal world, in this less rigorous climate, even though the ground was completely frozen over, did not disappear so entirely as on Melville Island. A few solitary hares were caught; but they were in a miserable state of leanness, weighing only five or six pounds, and had a pure white covering, which resembled swan's down rather than hair. About a hundred white foxes were found in the nets during the winter. These beautiful creatures, when first caught, were perfectly wild and ungovernable; but shortly the young ones at least threw off this timidity. A delicate little animal found one day in the snare proved to be an ermine; but it was excessively frightened, and to the general regret soon died.

The winter months were also enlivened by various beautiful appearances which the sky at that season presented. The northern world, when the sun departs, is by no means involved in that deep, monotonous gloom which such a privation might indicate. After that luminary has finally quitted the earth, and the long northern winter has closed in, the heavens become a gay scene, through which the most brilliant meteors are perpetually playing. Those singular and beautiful streams of light, called commonly the *Aurora Borealis*, or Northern Morning, keep up an almost incessant illumination. They were discerned in full splendour by Captains Parry and Lyon during their Arctic residence. The light had a tendency to form an irregular arch, which, in calm weather, was often very distinct, though its upper boundary was seldom well defined; but, whenever the air became agitated, showers of rays spread in every direction, with the brilliancy and rapidity of lightning. Sometimes long bands of light were spread out with inconceivable rapidity, but always appearing to move to and from a fixed point, somewhat like a riband held in the hand and shaken with an undulatory motion. No rule, however, could be traced in the movement of those lighter parcels called "the merry dancers," which flew about perpetually in every direction and towards every quarter. In stormy weather the northern lights always became more rapid in their motions, sharing all the wildness of the blast. They gave an indescribable air of magic to the whole scene, and made it not wonderful, that by the untaught Indian they should be viewed as "the spirits of his fathers roaming through the land of souls."

Several questions have been agitated with respect to the *Aurora*. It has been said to be accompanied with a hissing and cracking noise; and indeed Captain Lyon observes, that the sudden glare and rapid bursts of those wondrous showers of fire make it difficult to fancy their movements wholly without sound. Yet nothing was really ever heard. Captain Parry complains, that he could not expose his ears to the cold long enough completely to ascertain the point; but Captain Lyon declares, that he stood for hours on the ice listening, and at a distance from every sounding body, till he became thoroughly satisfied that none proceeded from the *Aurora*. It has been a question whether this meteor hid the stars; it was generally decided that it dimmed the lustre of those heavenly bodies, as if a thin gauze veil had been drawn over them,—an effect which was augmented when several luminous portions were spread over each other. In a clear atmosphere these lights shone with a brightness which gave the impression that they were nearer than the clouds; but whenever these last overspread the sky, the *Aurora* was hid by them, and must therefore have been more distant. To Captain Parry the light appeared to assume tints of yellow and lilac; but to Captain Lyon its colour always resembled that of the Milky-Way, or of very vivid sheet-lightning. The present writer saw the *Aurora* once, and only once, in its utmost brilliancy, and exhibiting all the phenomena described by these northern observers,—his impressions agreeing particularly with those of Captain Lyon.

Other luminous meteors, arising apparently from the refraction caused by the minute and highly-crystallized spiculæ of ice, appear in succession to embellish the northern sky. The sun and moon are often surrounded with halos,—concentric circles of vapour, tinted with the brightest hues of the rainbow. Parhelia, or mock suns, frequently adorned with these accompaniments, shine at once in different quarters of the firmament. Ellis, who was with Moor and Smith to Hudson's Bay, has seen six in one sky. They are most brilliant at daybreak, diminish in lustre as the real sun ascends, but again brighten at his setting. The sun himself, for some time before he finally departs for the winter, and also after his reappearance in spring, tinges the sky with hues of matchless brilliancy. The edges of the clouds near that luminary often present a fiery or burnished appearance, while the opposite horizon glows with a deep purple, gradually softening as it ascends into a delicate rose-colour of inconceivable beauty. As the solar orb at these periods never rises more than a few degrees above the horizon, he is, as it were, in a state of permanent rising and setting, and seems to exhibit longer and more variously the beautiful appearances arising out of that position. At this time the naked eye can view him without being dazzled; and Captain Lyon considers the softened blush-colour, which his rays exhibit through frost, as possessing a charm which surpasses even that of an Italian sky.

Amid all these resources, the monotony of the scene was beginning to be oppressive, when it was relieved by an unexpected incident, which attracted universal attention. On the morning of the 1st February, a number of distant figures were seen moving over the ice, and, when they were viewed through glasses, the cry was raised, "Esquimaux! Esquimaux!" As it was of great importance to deal courteously and discreetly with these strangers, the two commanders formed a party of six, who walked in files behind each other, that they might cause no alarm. The Esquimaux then formed themselves into a line of twenty-one, advanced slowly, and at length made a full stop. In this order they saluted the strangers by the usual movement of beating their breasts. They were substantially clothed in rich and dark deer-skins, and appeared a much more quiet and orderly race than their rude countrymen of the Savage Islands. On the English producing their precious commodities, knives, nails, and needles, an active traffic was set on foot; and the females, on seeing that much importance was attached to the skins which formed their clothing, began immediately to strip off those with which their fair persons were covered. The captains felt alarm for the consequences, under a temperature more than fifty degrees below the freezing-point; but were soon consoled by discerning underneath another comfortable suit. They were now cordially invited to enter their habitations, to which they agreed most readily, only that there appeared no habitations to enter. However, they were led to a hole in the snow, and instructed to place themselves on their hands and knees, in which position, having crept through a long winding passage, they arrived at a little hall with a dome-shaped roof, whence doors opened into three apartments, each occupied by a separate family. These proved to be five distinct mansions, tenanted by sixty-four men, women, and children. The materials and structure of these abodes were still more singular than their position. Snow, the chief product of the northern tempests, became here a protection against its own cold. It was formed into curved slabs of about two feet long and half a foot thick, put together by a most judicious masonry, so as to present a species of dome-shaped structures, rising six or seven feet above the ground, and about fourteen or sixteen feet in diameter. The mode of inserting the key-slab, which bound the whole together, would, it is said, have been satisfactory to the eye of a regularly-bred artist. A plate of ice in the roof served as a window, and admitted the light as through ground glass; which, when it shone on the interior mansions, in their first state of pure and beautiful transparency, produced soft and glittering tints of green and blue. But, alas! ere long, accumulated dirt, smoke, and offal, converted these apartments into a scene of blackness and stench. This little village appeared at first like a cluster of hillocks amid the snow; but successive falls filled up the vacuities, and converted it almost into a smooth surface, so that even boys and dogs were seen walking and sporting over the roofs; though, as summer and thaw advanced, a leg sometimes penetrated, and appeared to the alarmed inmates below. Then, too, the ceiling begins to drip; and the tenants, after repeatedly endeavouring to patch it with fresh slabs, and catching, of course, some severe colds, are obliged to betake themselves to a more durable covering. In each room, suspended from the roof, burns a lamp, with a long wick formed of a peculiar species of moss, fed with the oil of the seal or the walrus, and serving at once for light, heat, and cookery. The family sit round the apartment, on a bench formed of snow, strewed with slender twigs, and covered with skins; but this part of the dwelling must be care-

fully kept a good deal below the freezing-point, since a higher temperature would speedily dissolve the walls of the frail tenement.

After a cheerful and friendly visit, an invitation was given to the Esquimaux to repair to the ships, when fifty accepted it with alacrity. Partly walking, and partly dancing, they soon reached the vessels, where a striking congeniality of spirit was soon found to exist between them and the sailors; boisterous fun forming to each the chief source of enjoyment. A fiddle and drum being produced, the natives struck up a dance, or rather a succession of vehement leaps, accompanied with loud shouts and yells. Seeing the Kabloonas or Whites, as they called the strangers, engaged in the game of leap-frog, they attempted to join; but not duly understanding how to measure their movements, they made such over-leaps as sometimes to pitch on the crown of their heads: however, they sprang up quite unconcerned. Their attention was specially attracted to the effects of a winch, by which one sailor forcibly drew towards him a party of ten or twelve of their number though grinning and straining every nerve in resistance; but finding all in vain, they joined in the burst of good-humoured laughter till tears streamed from their eyes. One intelligent old man followed Captain Lyon to the cabin, and viewed with rational surprise various objects which were presented. The performance of a hand-organ and a musical snuff-box struck him with breathless admiration; and on seeing drawings of the Esquimaux in Hudson's Strait, he soon understood them, and showed the difference between their dress and appearance and that of his own tribe. On seeing the sketch of a bear, he raised a loud cry, drew up his sleeves, and showed the scars of three deep wounds received in encounters with that terrible animal. The seamen sought to treat their visitors to such delicacies as their ship afforded, but were for some time at a loss to discover how their palate might be gratified. Grog, the seaman's choicest luxury, only one old woman could be induced to taste. Sugar, sweetmeats, gingerbread, were accepted only out of complaisance, and eaten with manifest disgust; but train-oil, entrails of animals, and any thing consisting of pure fat or grease, were swallowed in immense quantities, and with symptoms of exquisite delight. This taste was first evinced by an old woman, who having sold her oil-pot, took care previously to empty the contents into her stomach, and lick it clean with her tongue, regardless of her face becoming thus as black as soot. Captain Lyon being disposed to ingratiate himself with rather a handsome young damsel, presented her with a good moulded candle, six in the pound. She immediately began to eat off the tallow with every symptom of the greatest enjoyment, after which she thrust the wick into her mouth; but the Captain, concerned for the consequences to this delicate virgin, insisted on pulling it out. In preference to strong liquors they drank water in the most enormous quantities, by gallons at a time, and two quarts at a draught; a supply of liquid which is perhaps necessary to dissolve their gross food, and which, being obtained only from snow artificially melted, is a scarce winter article.

The Esquimaux were attended by a large pack of wolves, which seemed to follow solely to pick up whatever might be found straggling or defenceless about their habitation. These animals continued through the whole winter ravening with hunger, and in eager watch for any victim which might come within their reach. For this purpose they took a station between the huts and the ships, ready to act against either as circumstances might dictate. They did not attack the sailors even when unarmed, though they were often seen hovering through the gloom in search of prey. Every stray dog was seized, and in a few minutes devoured. Two wolves broke into a snow-house close to the ship, and carried off each a dog larger than himself; but, being pursued, one of them was obliged to drop his booty. In the extremity of their hunger they hesitated not to tear and devour the cables and canvass found lying near the vessel. A deadly war was therefore waged against these fierce animals, of which thirteen were killed in the course of the season, and sent to be eaten by the Esquimaux,—a present which was received with much satisfaction.

As spring advanced, the attention of the officers was almost wholly engrossed by the prospects of navigation and discovery during the approaching summer. Their Esquimaux neighbours, by no means destitute of intelligence, and accustomed to shift continually from place to place, were found to have acquired a very extensive knowledge of the seas and coasts of this part of America. One female, in particular, named Iligliuk, who bore even among her countrymen the character of "a wise woman," was, after a little instruction, enabled to convey to the strangers the outlines of her geographical knowledge in the form of a rude map. A pencil being put into her hand, she traced the shore from Repulse Bay with such a tolerable measure of accuracy as inspired great confidence in what she might farther delineate. Iligliuk then began to exhibit a coast reaching far to the north, being, in fact, the eastern limits of Melville peninsula. Next her pencil took a westward direction, when her farther progress was watched with the deepest interest; upon which she was seen tracing a strait between opposite lands, that extended westward till it opened on each side, and spread into an apparently unbounded ocean. This delineation, which promised to fulfil their most sanguine hopes, gratified the officers beyond measure, and they loaded Iligliuk with attentions which unluckily soon turned her head, and made her so conceited and disdainful that they were obliged to discontinue their notice of her.

Captain Lyon, in the middle of March, undertook a journey across a piece of land, lying between the station of the ships and the continent, which had been named Winter Island. The party were scarcely gone when they encountered a heavy gale, bringing with it clouds of drift, with a cold so intense, that they could not stop for a moment without having their faces covered with frost-bites. After some vain struggles they determined to pitch their tent; but as the temperature within was at zero, and was continually lowering, they felt that they could not live through the night under this shelter. They therefore dug a cave in the earth, and by huddling together round a fire, immersed in smoke, to which no vent was allowed, contrived to keep up a degree of warmth, though still ten or fifteen degrees below the freezing-point. In the morning their sledge was too deeply buried beneath the drift to leave any hope of digging it out, and they could reach the ships, now six miles distant, only by proceeding on foot through a tempest of snow falling so thick that they could not see a yard before them. Finding sometimes no track, sometimes several leading in different directions, they were soon bewildered, and wandered they knew not where among heavy hummocks of ice. The frost-bites were so numerous that they could not muster hands enough to rub the parts affected, and some began to sink into that dreadful insensibility which is the prelude to death by cold, and to reel about like drunken men. Thus they had resigned almost every hope of deliverance, when providentially there appeared a new beaten track, which they determined to follow, and in ten minutes it led them to the ships. Their arrival there caused indescribable joy, as they had been nearly given up for lost, while no party could be sent in search of them without imminent risk of sharing their fate.

On the 8th May, in a more favourable season, Captain Lyon undertook another journey. In a few hours he crossed Winter Island, and reached the strait separating it from the continent, covered with heavy-grounded ice very difficult to walk upon. The sun, now powerful, produced such a glare on the snow as affected several of the party with severe blindness; while the only means of procuring water was by holding up plates of ice in the solar rays, by which they were gradually melted. The party, having reached the mainland, proceeded a considerable way along the coast, crossing several bays upon the ice; but at last they came in view of a bold cape, which they fondly and vainly hoped was the extreme point of America. Here they were overtaken by a storm of snow, but not accompanied, like the former, with perilous cold; it melted as it fell, and formed a pulp which penetrated into their tents, yet did not dissolve so completely as to be fit for drinking. This storm kept them imprisoned for sixty-eight hours; which dreary interval they enlivened by reading in turn from three books they chanced to have with them, and as soon as the sun began to gleam they hastened to return to the ships.

The end of May presented a gloomy aspect, the season being still more backward than in the more northerly and rigorous climate of Melville Island. The snow was dissolved only on some spots, and hardly any symptoms of vegetation were yet visible; but as there was an extent of open water in the sea without, Captain Parry determined upon sawing his way through to it. This was a most laborious process, the ice being much thicker and stronger than at the commencement of the season; and after the seamen had continued at it more than a fortnight, and were within forty-eight hours of completing a canal, the body of the ice made a movement which closed it entirely up. As they were looking on in despair at this disaster, another passage opened, which they attempted to render available. This too was closed in the same manner; but these agitations had at last the effect of causing the whole mass to float out into the open sea, and thus leaving to them an unobstructed passage.

On the 2d July the ships began their career of discovery. They had a favourable run through this sea, which formed a continuation of Fox's Channel; but a strong current from the north was bringing down the masses of ice with great force. The Hecla underwent some severe pressures, and within five or six hundred yards of the Fury, two large floes dashed against each other with such a tremendous concussion, that numberless huge masses were thrown fifty or sixty feet into the air. The vessel, had she come for a moment within the sphere of these movements, must have been dashed to pieces,—happily she escaped. This current, however, was highly promising, since it could not be traced to the mouth of Hudson's Straits, but must have come from the western ocean, which they were so anxious to reach.

The ice passed by, and the ships proceeded with a favouring wind and tide. The shores began now to put on their summer aspect; the snow had nearly disappeared; and the ground was covered with the richest bloom of Arctic vegetation. The expedition came to a fine river named Barrow, which formed a most picturesque fall down rocks richly fringed with very brilliant plants. Here the rein-deer sporting, the eider-duck, the golden plover, and the snow-bunting, spreading their wings, produced a gay and delightful scene. On the 14th the navigators reached the island of Amitioke, which had been described as situated near the strait they were then endeavouring to reach. They saw about two hundred walruses lying piled, as usual, over each other on the loose drift-ice. A boat's crew from each ship proceeded to the attack; but these gallant amphibia, some with their cubs mounted on their backs, made the most desperate resistance, and one of them tore the planks of a boat in two or three places. Three only were killed, the flesh of which was found tolerable, affording a variety amid the ordinary sea-diet.

The discoverers now proceeded northwards, and saw before them a bold and high range of coast, separated apparently from that along which they were sailing. This feature agreeing with the indications of the fair Iligliuk, flattered them that they were approaching the strait exhibited by her as forming the entrance into the Polar basin. They pushed on full of hope and animation, and were farther cheered by reaching the small island of Igloolik, which she had described as situated at the very commencement of the passage. Accordingly they soon saw the strait stretching westward before them in long perspective; but, alas! they discovered at the same moment an unbroken sheet of ice from shore to shore, crossing and blocking up the passage; and this not a loose accidental floe, but the ice of the preceding winter, on which the midsummer sun had not produced the slightest change. Unable to advance a single step, they amused themselves with land-excursions in different directions; and Captain Parry at length determined, on the 14th August, with a party of six, to undertake an expedition along the frozen surface of the strait. The journey was very laborious, the ice being sometimes thrown up in rugged hummocks, and occasionally leaving large spaces of open water, which it was necessary to cross on a plank, or on pieces of ice instead of boats. In four days they came in view of a peninsula terminated by a bold cape, the approach to which was guarded by successive ranges of strata, resembling the tiers or galleries of a high and commanding fortification. The party, however, scrambled to the summit, whence they enjoyed a most gratifying spectacle. They were at the narrowest part of the strait, here about two miles across, with a tide or current running through it at the rate of two miles an hour. Westward the shores on each side receded, till, for three points of the compass and amid a clear horizon, no land was visible. The captain doubted not that from this position he beheld the Polar sea; into which, notwithstanding the formidable barriers of ice which intervened, he cherished the most sanguine hopes of forcing his way. He named this the strait of the Fury and Hecla, and gave the sailors an extra can of grog, to drink a safe and speedy passage through its channel.

Captain Parry now lost no time in returning to the ships, where his arrival was joyful and seasonable; for the opposing barrier, which had been gradually softening and breaking into various rents and fissures, at once almost entirely disappeared, and the vessels next morning were in open water. On the 21st they got under weigh; and, though retarded by fogs and other obstructions, had arrived on the 26th at that central and narrowest channel which the commander had formerly reached. A brisk breeze now sprang up, the sky cleared, they dashed across a current of three or four knots an hour, and sanguinely hoped for an entire success, which would compensate so many delays and disappointments. Suddenly, from the crow's nest above, it was announced that ice, in a continuous and impenetrable field, unmoved from its winter station, occupied the whole breadth of the channel. In an hour they reached this barrier, which they found soft, porous, and what is termed rotten. Spreading all their canvass, they bore down upon it, and actually forced their way through a space of three or four hundred yards; but there they stuck, and found their progress arrested by a fixed and impenetrable mass. From this point, during the whole season, the ships were unable to advance a single step. Nor had the crews any means of exerting their activity except in land-journeys. Captain Lyon undertook an expedition southward, to ascertain if any inlet or passage from sea to sea in this direction had escaped notice. The country, however, was so filled with rugged and rocky hills, some a thousand feet high, and with chains of lakes in which much ice was floating, that he could not proceed above seven miles. Though it was the beginning of September, the season was only that of early spring; and the buds of the poppy and saxifrage were just unfolding, to be prematurely nipped by the fast-approaching winter.

More satisfactory information was derived from another excursion made by Messrs Reid and Bushman, who penetrated sixty miles westward along the southern coast of Cockburn Island, till they reached a pinnacle, whence they saw, beyond all doubt, the Polar ocean spreading its boundless expanse before them; but tremendous barriers of ice filled the strait, and precluded all approach towards that great and desired object.

It was now the middle of September, and the usual symptoms, of deer trooping in herds southward, floating pieces of ice consolidating into masses, and the thin pancake crust forming on the surface of the waters, reminded the mariners, not only that they could hope for no farther removal of the obstacles which arrested their progress, but that they must lose no time in providing winter-quarters. The middle of the strait, at the spot where they had been first stopped, occurred as the station whence they would be most likely to push future discovery; but prudence suggested a doubt, whether the ships, enclosed in this icy prison with such strong barriers on each side, might ever be able to effect their extrication. It appeared, at all events, a serious consideration, that they might be shut up here for eleven months, surrounded by rocks and ice, amid the privations of an Arctic winter. By returning to Igloolik, they would be ready to catch the earliest opening, which was expected to take place on the eastern side, from whence a few days would then bring them to their present station.

On the 30th October, by the usual operation of sawing, the ships were established in a harbour at Igloolik. The ensuing season was passed with the most careful attention to the health and comfort of the crews; but though their spirits did sink, there appears to have been, on the whole, less of gaiety and lightness of heart than in the two former winterings. We hear nothing of the drama or even of the school. In this position, north of Winter Island, they were deprived for about seven weeks of the sun's cheering beams. On the 2d December refraction still showed, from the deck of the Fury, about the sixteenth part of his disk. About the new year *Arcturus* and *Capella,* stars of the first magnitude, were visible for half an hour before and after mid-day. On the 5th January, (1823,) the horizon was so brightly suffused with red, that they hoped ere long to see the sun's orb burst forth; but a fortnight of thick fog occasioned a disappointment. On the 19th, the sky having cleared, they saw him rise, attended by two parhelia, and both crews turned out to enjoy the novelty and splendour of this cheering spectacle.

The sailors found at Igloolik a colony of Esquimaux, who received them at first with surprise and some degree of alarm; but, on learning they were from Winter Island and intimate with its tenants of last season, they hailed them at once as familiar acquaintances. These natives belonged to the same tribe, and were connected by alliance and close relationship with many individuals of the Winter Island party; of whom, therefore, they were delighted to receive tidings. The crews spent the winter with them on quite a friendly footing, and rendered important services to them during a period of severe sickness. This intercourse, however, was not on the whole nearly so satisfactory as in the former place and season. It began to be observed, that their attachment to the *Kabloonas* was greatly prompted by interest and by the hope of extracting presents; that they begged for food and gifts almost without intermission, and yet showed no gratitude on receiving them; taking much less into consideration what they themselves got, than what others got more than they. The indifference shown towards such of their own tribe as were in a debilitated and suffering state was viewed also with much dissatisfaction. Kagha, a widow, cursed certainly with a most frightful temper, was found almost perishing through neglect. Captain Lyon took her into his own cabin, where, however, her filth and scolding made her a perfect nuisance; so that, after being recruited and clothed in two folds of deer-skin, she was remanded to the huts. Ten days after she was found at the point of death, solely, it appeared, through want of food; and though removed immediately to the ship's hospital, she died next day. Our people were also much displeased at the stoical firmness with which the relations received notice of two of their deceased kindred, whom the dogs had dug up from under the snow, that formed their only covering, and had devoured. It was indeed very difficult to find an earthy grave beneath the glebe, now frozen as hard as rock; but an Esquimaux acquaintance having lost his wife, the sailors piled over her such a heap of stones as might defy the attempts of all the animals, wild and tame, which prowl throughout this dreary region. The man gave thanks, but not cordially; he even expressed a dread lest the pressure of this huge pile would be painfully felt by his deceased spouse; and soon after, when an infant died, he declared her wholly incapable of bearing such a burden, and would allow nothing but snow to be laid over her.

The Esquimaux, during this expedition, became the subjects of a more minute observation than had ever before been made upon them by Europeans. They constitute a most widely-diffused race, occupying all the shores of the Northern Ocean, and embracing nearly the entire circuit of the globe. Richardson and Franklin found them along the whole coast of the American Polar sea; Kotzebue in the channel near Behring's Straits. The Samoiedes and Kamtchadales, in northern Asia, seem to belong to the same family. A similarity of visage and figure, boats, huts, and instruments,—even a resemblance in habits, character, and mode of life,—might have been produced by the common pressure of the same very peculiar outward circumstances. The affinity of speech, however, which is such as proves the dialects of all the Esquimaux to be mere varieties of one common language, affords a clear proof, that an original race from some one quarter has spread over the whole range of those immense and desolate shores. This migration must have been facilitated by the vast continuity of coast which stretches along the Arctic ocean, and which is not equalled in any other quarter. Hence, probably, the Esquimaux, at distant ages, connected the old and the new continents, which at all other points were then wholly unknown to each other.

The external form of that people seems influenced and, as it were, characterized by the severity of the climate. Their stature is decidedly lower than tha of the European ; five feet nine inches being considered even in a man as almost gigantic. Though the trunk of the body is somewhat thick, all the extremities are small, especially the hands and feet, and the fingers short. The face is broad and flat, the nose small, and at the same time sunk so deep, tha in some instances a ruler could be applied from cheek to cheek without touching it. It is somewher observed, that their visage presents that peculia form which the human face naturally assume under exposure to intense cold, when all the projecting features are drawn in and the cheeks consequently pushed out. In the same way exposure to the weather may perhaps produce the high cheek-bones of mountaineers. Under these modifications, however, both their body and limbs are very tolerably shaped. Even the female countenance though without pretensions to regular beauty, i often agreeable, with a frank and good-humoured expression ; so that, were it cleared of the thick crus of grease and dirt, so as to exhibit the real complexion, which is only that of a deep brunette, it might

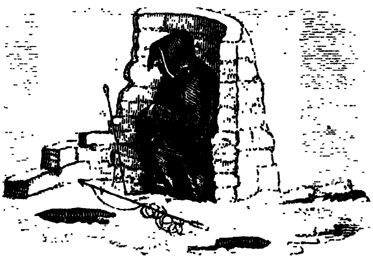
even in Europe, be reckoned handsome. The skin is unctuous and unpleasantly cold to the touch; the flesh soft and flabby, owing probably to the fat animal substances which form the principal part of their food.

Dress, through the necessity imposed by the climate, is much more ample, and prepared with greater care, than is usual among other savage tribes. That of the men chiefly consists in a double coat of deer-skin; the inner part of which, having the hair placed next the body, serves as a shirt, while from the outer a spacious hood is raised to cover the head. The breeches, of the same material, and also double, reach down, overlapping the boots, which extend to the knee, and are composed either of deer-skin, or, if intended for hunting and travelling, of the hide of the seal and walrus. The dress of the females consists of the same particulars, with only some variations in form. They considered themselves particularly fortunate in wearing breeches, and could not hear without pity of their sisters in Europe, whom the caprice of fashion had deprived of so comfortable a habiliment. Their chief distinction lay in their boots, framed of such capacious dimensions as to make each leg appear as thick as the body, and allow them to move only in a waddling gait, similar to that of Muscovy ducks. These boots form, however, most spacious receptacles for whatever goods, lawful or unlawful, may come into the possession of the fair wearer. Captain Parry suspects that this huge buskin was originally constructed as a receptacle for their children,—a practice still prevalent among some tribes,—and thus retains its old form, though the hood is now generally substituted for this domestic purpose.

The Esquimaux do not huddle on these garments in a rude and careless manner, as a mere protection against the fierce influence of the climate: they display, like other savages, a passion for embellishment and finery. Their clothes are neatly sewed with threads made from the sinews of animals; the effect of their rich furs is heightened by being arranged in stripes of various colours, and by fringes along the border, adjusted often with considerable taste. They sought anxiously for beads, in lieu of which they had ornamented themselves with girdles composed of the teeth of the fox, wolf, or musk-ox, and one female had fringed her jacket with a long row of foxes' noses. It was suspected that these ornaments might be regarded in some degree under the character of amulets or charms. Nor do the Esquimaux omit that universal ornament of savages, the painting of the human skin. This is executed not by the Indian process of puncturing, but by a species of sewing. The women draw under the epidermis a needle, with a thread dipt in lamp-black and oil, which being taken out, and pressure applied to the part, leaves behind it a permanent olive tint. This operation, when performed with complete success, does not draw blood; but the execution is seldom carried to that degree of perfection. The face, arms, thighs, and sometimes the breasts of the females, are profusely covered with this artificial tint.

The labour necessary for subsistence under this rigorous climate is more arduous, and occupies a greater share of time, than among any other race, either civilized or savage. The ground, frozen for more than nine months of the year, yields neither root nor herb which can form a standard article of food. No tame animals are reared for this purpose, their dogs being so applied only in the last extremity. Hunting is their only resource; and hence their days are spent in the chase of the wild animals which inhabit the sea and the shore. They lead thus a life of contrivance and adventure, in the course of which energy and hardihood of character are formed, and many faculties amply developed. In the absence or extreme scarcity of wood and iron, they make use of the bones of animals, which they have of all shapes and sizes, yet this is often found too inflexible a material; while cord or line is formed by cutting their toughest and most elastic skins into long stripes. During the short summer, they pursue with bow and arrow the deer, whose flesh as meat, and whose skin as clothing, are esteemed above all others. The eider and other ducks also furnish them with food; while the hide, with the feathers inwards, forms a light and comfortable clothing. The early winter, however, compels these animals, in large bands, to move into more genial climes; and hence, for nine months annually, their food must be found in the waters. These indeed are filled with the large cetaceous fishes, the seal, the walrus, and even the whale; but the hunters and the game are separated by a thick covering of ice. These animals, however, though they make their chief dwellings beneath the waves, as formerly observed, experience the necessity of ascending from time to time for the purposes of respiration. At such moments the

Esquimaux watch with the most indefatigable patience, often erecting a little snow-shed to protect them from the cold; and the instant the animal appears, strike into him a dart or harpoon, of which they have several forms and sizes, and sometimes throw by means of a long line, a necessary part of their apparatus. Their grandest achievement, however, consists in the attack of the whale; on which occasion a large body of them unite, armed with a variety of weapons. When struck he instantly plunges into the water; but, being obliged to come up at short intervals, is always attacked afresh, till, overcome by fatigue and loss of blood, this mighty monarch of the deep remains an unresisting prey. An Esquimaux does not hesitate, even singly, to attack the Polar bear, the fiercest and most terrible of all the Arctic races. In this encounter, however, he must be aided by a band of his trusty dogs, which rush fearlessly on, keep the animal at bay, and assail him on all sides; while the



master advances with his spear, and avoiding, with almost preternatural agility, the furious springs of the enraged monster, pierces him with repeated strokes. Nooses, springes, and traps, are also used with skill, chiefly against birds and foxes.

The Esquimaux show little prudence in the management of their supplies. The instant that tidings transpire of the capture of a walrus, shouts of exultation are raised through the village; as its inhabitants share the prize in common. On its arrival, slices are instantly cut out, every lamp is supplied with oil, the houses are in a blaze; all the pots are filled with flesh, and the women, while cooking, pick out and devour the most dainty morsels. The feast prepared, one man takes up a large piece, applies it to his mouth, and severs with his teeth as much as that cavity can possibly admit; then hands it to his neighbour, and he to the next, till all is consumed. A new piece is then supplied, and thus the process continues, almost without intermission, till the animal is entirely consumed. To the capacity of Esquimaux stomachs there seems scarcely any limit. Some experiments on the subject, made in the Fury, and carefully noted, produced the most surprising results. A youth named Toolooak stands recorded as having, in twenty-one hours, received into his stomach ten pounds four ounces of solid food, a gallon and a pint of water, with more than a pint of soup. Captain Lyon pitched against him Kangara, who in nineteen hours finished nine pounds fifteen ounces of solid, and a gallon and a half of fluid. At this rate the most ample store very speedily disappears; one day they are labouring under fever, hemorrhage, and all the maladies incident to repletion; a few days after they are without a morsel to eat.

Considered as to their intellectual condition, the Esquimaux have not the least tincture of what goes by the name of learning; can form no abstract ideas; nor count above ten, the number of their fingers. Yet, amid a life somewhat varied and eventful, many faculties, without any artificial culture, are spontaneously developed. We have seen the skill displayed in the construction of their houses, as well as in pursuing and killing the various tenants of the earth and of the waters, on which their subsistence depends. Their migratory habits give them a considerable extent of local and geographical knowledge, which they are even in a certain degree able to systematize and delineate. They are also shrewd and intelligent in all the affairs of common life, and possess a considerable talent for humour and mimicry.

In their moral qualities, the Esquimaux, or at least this particular tribe, present much that is worthy of commendation. At the first opening of the intercourse, the most undeviating honesty marked all their conduct, though this quality, in the course of two winters' communication, was considerably undermined. They were exposed indeed to most severe temptation, by seeing constantly scattered about the ships little planks, pieces of iron, and empty tin pots, which was to them as if the decks had been strewed with gold and jewels. It also came to their knowledge that, in some of their early exchanges, rich skins had been bartered for beads and other trifles of no real value,—a system against which they exclaimed as absolute robbery. From first to last the virtue now mentioned was practised among themselves in a manner worthy of the golden age. Their dresses, sledges, and all their implements of hunting and fishing, were left exposed inside or outside of the huts, without any instance being known of their having been carried off. Property, without the aid of laws and tribunals, was in the most perfect security. The common right to the products of the chase marks also a singular union, without seeming to relax their diligence in search of food, though it may perhaps contribute to their very thoughtless consumption of it. The navigators admit that they were received with the most cordial hospitality into the little huts, where the best meat was set before them, and the women vied with each other in the attentions of cooking, drying, and mending their clothes. "The women working and singing, their husbands quietly mending their lines, the children playing before the door, and the pot boiling over the blaze of a cheerful lamp," gave a pleasing picture of savage life. Yet a continued intercourse showed that the Esquimaux inherited their full share of human frailty. Begging we shall pass over, though in many instances persevering and incessant, because it seems to have been called forth almost entirely by their connexion with our countrymen, and by too lavish presents at the first; while their little bursts of envy appear to have flowed from the same source. But the fair Esquimaux are charged with a strong propensity to slander and detraction, which were as busy among them as they sat in circles round the door mending their lines as in the most fashionable drawing-rooms. Their own conduct, meantime, is said to have afforded the most ample scope for censure, especially in regard to connubial fidelity; and yet when it is admitted that these faults were carefully concealed, and much outward decorum observed, and that the propensity to calumny often led the natives beyond the strict limits of truth, we doubt whether too implicit reliance may not have been placed on the scandalous chronicle of the frozen regions. The natives certainly do appear to display a peculiar apathy in regard to the sufferings and even the death of neighbours and relations. Widows, and the aged and infirm, if they have not children of their own, experience the greatest indifference. In times of plenty, indeed, they share in the general abundance of food; but during scarcity a very small quantity reaches them, and, receiving no attendance in their sickness, they often perish through pure want and neglect. The children are treated with extreme tenderness; though the practice of adoption, which prevails most extensively, and which establishes in full force between the parties the ties of father and child, is practised with regard to boys only, and seemingly with the view that they may contribute to support the old age of their factitious parents.

The religious ideas of the Esquimaux, though they cannot be dignified with any better name than superstition, are not much more absurd than the popular creed of the ancient Greeks and Romans. Their principal deity is Aywillaiyoo, a female immensely tall, with only the left eye, wearing a pigtail reaching to her knee, so thick that it can scarcely be grasped by both hands. Captain Lyon witnessed a mighty incantation, in which Toolemak, the chief magician, summoned Aywillaiyoo to the upper world to utter her oracles. The party were assembled in a hut, where light after light was put out, till they were left in total darkness. Toolemak then, after loud invocations, professed to descend to the world below to bring up the goddess. Soon there arose a low chant of peculiar sound, imagined to be the voice of Aywillaiyoo. During half an hour, in reply to the loud screams and questions of her votaries, she uttered dubious and mystical responses; after which the sound died away, and she was supposed to descend beneath the earth, when Toolemak, with a shout, announced his own return to the upper world. The magician, however, being soon after on board a British ship, was treated with nine glasses of hot water (brandy,) under the influence of which he began to act over again his enchantments, when it appeared, that by varying modes of applying the hand or jacket to the mouth, he produced those changeful and mysterious sounds which had passed for the words of Aywillaiyoo. This divinity has for her father a giant with one arm. The Esquimaux pantheon comprises, moreover, Pamiooli, a spirit frequently invoked, and a large bear, whose dwelling is in the middle of the ice, and who frequently holds converse with mankind. The natives believe also in a future world, the employments and pleasures of which, according to the usual creed of savage races, are all sensual. The soul descends beneath the earth through successive abodes, the first of which has somewhat of the nature of purgatory; but the good spirits passing through it find the other mansions successively improve, till they reach that of perfect bliss, far beneath, where the sun never sets, and where, by the side of large lakes that never freeze, the deer roam in vast herds, and the seal and walrus always abound in the waters.

We now return to the progress of the expedition. The spring was singularly unfavourable. Captain Lyon attempted to penetrate across Melville Peninsula, but found the route so rugged and so barred by steep chains of mountains, that he was obliged to return in nineteen days without any discovery, except of two rapid rivers falling into the sea near Igloolik. Lieutenant Hoppner accompanied a party of Esquimaux to Cockburn Island, but could not penetrate to any distance inland. It was the 7th of August before they were able, by severe sawing, to reach the open sea; by which time Captain Parry had renounced the hope of effecting any thing important during the short remnant of this season. He formed, however, a very bold plan, which was to bring all the stores of the other vessel on board the Fury, and with it alone to brave a third winter in the Polar regions, hoping that the succeeding summer might be more propitious. But as he was preparing to carry this too daring project into effect, a report was made that symptoms of scurvy had broken out on several of the crew, whose physical strength appeared to be generally impaired by the two hard winters through which they had passed. This left no choice; and, in compliance with the general opinion of his officers, Captain Parry began his voyage homewards. The ships were drifted about in a stormy sea covered with ice for twenty-four days; but, being at last favoured with a westerly breeze, they crossed the Atlantic, and on the 10th of October, 1823, arrived in Brassa Sound, Shetland. After two successive years thus passed in the depths of the frozen world, whence not the faintest rumour of the expedition had reached Britain, its members were viewed almost as men risen from the dead. The bells of Lerwick were rung, and other extraordinary demonstrations of joy made on their arrival. In a few days they entered the Thames.

Two attempts had thus been made, each to a certain point successful, but both arrested much short of the completion of the grand enterprise. The government at home, however, were not willing to stop short in their spirited career. The western extremity of Melville Island, and the strait of the Fury and Hecla, appeared to be both so blocked up as to afford little hope; but Prince Regent's Inlet, when explored during Captain Parry's voyage, had presented, indeed, an icy barrier, but such as had so often given way suddenly and almost instantaneously, that its existence early in the season could not be considered very alarming. A passage through this channel would bring the ships to the great sea bounding the northern coast of America, that had been seen from the Strait of the Fury and Hecla, and along which Captain Franklin had partly sailed, and by which there was the fairest hope of reaching, by the most direct route, the waters of the great Pacific. To follow up these views, Captain Parry was again fitted out in the Hecla; while, in the accidental absence of Captain Lyon, the Fury was intrusted to Lieutenant, now Captain Hoppner, who had taken an active part in the operations of the last voyage.

The expedition set sail from Northfleet on the 19th

May, 1824, and was in Davis's Strait by the middle of June. As the season, however, chanced to be peculiarly rigorous, it was not till the 10th September, that, after repeated repulses and severe straining, they caught a view of the bold and magnificent shores of Lancaster Sound, in which a few solitary icebergs were floating. After this they thought themselves fortunate, when, by pushing their way through many miles of newly-formed ice, they reached Port Bowen in time to make it their winter-quarters.

The provision made during this winter for the physical well-being of the expedition was still more complete than in the former voyages. The heat of the cabins was kept up to between 50 and 60 degrees, and the seamen wore next the skin a clothing of fur, a substance which nature has endowed with a warmth far surpassing that of any human fabric. Yet the deep monotony produced by the perfectly uniform aspect of external nature, instead of becoming less sensible by habit, was only the more painfully felt. As the Arctic theatre had lost its attraction, Captain Hoppner started the idea of masquerades, which were, perhaps, still more out of keeping with the place and persons; but the sailors caught at it with pleasure, and on these occasions all of them acted their part with great spirit, and with strict decorum. The salutary and steady influence of the schools was again revived, and the whole crew gave their presence, either as teachers, scholars, or spectators.

The spring was unusually favourable, and, with comparatively easy sawing of the ice, the navigators warped out to sea on the 19th July, 1825. As it appeared most desirable to coast southward along the western shore of the inlet, they stood across the bay, but were soon arrested by a continuous barrier of ice, which, however, left an open space on the opposite side. A fruitless attempt was now made to penetrate southward, the channel there being found to be equally impeded with ice; hence it was judged advisable, with the view of seeking a less encumbered passage along the western shore, to stretch to the northward. An adverse gale, by which they were overtaken near the mouth of the inlet, now drove them eastward; but at last they regained their course, and soon came in view of the bold face of the Leopold Isles, the rocks of which rise in horizontal strata of limestone to the height of 600 or 700 feet, resembling a huge and impregnable fortress.

Having touched at Cape Seppings, Captain Parry proceeded down the inlet, where he was no longer arrested by an unbroken barrier of ice. The sea, however, was still heavily encumbered by numerous small fragments, that were tossing about in every direction, and pressed upon the ships so hard, that the men wished for a contrary wind; which, coming from the south, would open and disperse the masses collected and driven against them by the north wind. In this anxious and precarious state, they worked slowly on till the 1st August, when they reached the latitude of 72° 42′, longitude 91° 50′. Here Captain Parry, from the Hecla, saw the Fury receive a most severe shock by a large floe, that forced her against the grounded ice of the shore; and tidings soon came, that she had been very sharply *nipped*, and was admitting water copiously. The commander trusted that this would prove as harmless as the many shocks which this vessel had already endured; that the water made its entry by means of the twisted position into which she had been thrown; and that, when she was relieved from pressure, her leaks would close. But the next accounts were, that she could not be kept clear of water except by the action of four pumps, at which the whole crew, officers and men, were obliged to work. It became evident that the evils under which she laboured could only be discovered and remedied by the operation of *heaving down*, by which her position being reversed, the parts now under water would be exposed to view. This expedient required a harbour, and there was none at hand; however, something was formed which resembled one, by connecting with anchors and bower-cables the grounded ice to the shore. Four days were then spent in unlading the Fury of those ample stores with which she had been provided. The operation was interrupted, too, by a violent storm of snow; while the external ice being driven in, demolished, in a great measure, the slender bulwarks by which the vessel was secured. Her holds were filled with water, and every examination proved the damage of her hull to be still more serious than was at first apprehended. No means or prospect appeared, either of securing her in her present position, or of floating her to any known place of safety. In these circumstances, Captain Parry, without expressing any opinion of his own, called for a report from Captain Hoppner and his principal officers, all of whom agreed "that an absolute necessity existed for abandoning the Fury." Signals, therefore, were immediately made to the officers and men to carry their clothes and effects on board the Hecla. The stores, from want of room, were necessarily abandoned along with the ship; and barrels of beef, beer, biscuit, and other valuable articles of provision, were left exposed on those savage and desolate shores, where they were unlikely to afford aid or benefit to any human being. After such a disaster, and the end of August being arrived, there was just time enough left to bring the Hecla home with a fair prospect of safety,—an event which was in due time accomplished.

CHAPTER VIII.

Recent Voyages towards the North Pole.

Since the times of Hudson and Fotherby, during the lapse of more than a century, the attempt to reach and to cross the North Pole had not been resumed. The extraordinary zeal, however, which, in the early part of the reign of George III., and under the patronage of that excellent monarch, was kindled in the cause of naval discovery, failed not to extend in every direction. Mr Daines Barrington, distinguished by the union of rank with scientific acquirements, espoused with ardour the belief that, in spite of every obstacle, the pole of the earth might be reached, and various facts thereby brought to light, which at present were hid in mystery. He read to the Royal Society several papers on this subject, which were afterwards reduced into a separate treatise; and that learned body, imbibing with zeal the opinions of their eminent associate, solicited the Board of Admiralty to fit out an expedition which might attempt to realize this interesting object. The Earl of Sandwich, then at the head of the naval department, entered with ardour into the Society's views, and drew up the plan of an expedition, which he submitted to his majesty, assured of meeting with his cordial concurrence. The intentions of government having now transpired, Captain John Phipps, afterwards Lord Mulgrave, offered himself for the command, and was accepted. Two bomb-vessels, known under the rather odd names of the Racehorse and the Carcass, were selected, and stored with an extra provision of wine, spirits, and whatever else could contribute to the comfort and health of the crews. The Carcass was commanded by Lieutenant Lutwidge, under whom Horatio Nelson, afterwards so celebrated in the naval annals of Britain, served as cockswain. Other equipments were added, not hitherto customary in nautical expeditions. Those formerly fitted out in England were chiefly set on foot by mercantile bodies, who were content to combine geographical discovery with certain views of commercial advantage. The expeditions projected under the auspices of George III. were the first which had the promotion of science for their sole object. Mr Israel Lyons, an eminent astronomical observer, was employed by the Board of Longitude to supply the ships with suitable instruments; they also sent two chronometers, constructed with the greatest care by Kendall and Arnold, for measuring the distance from the first meridian, by difference of time. Mr Cumming constructed a seconds-pendulum, fitted to determine the range of that instrument in high latitudes. Sir Joseph Banks and M. d'Alembert drew up papers suggesting various scientific objects, respecting which observations would be desirable. The vessels were also supplied with Dr Irving's apparatus for distilling fresh water from the sea,—an invention which, being then recent, excited much interest.

Thus equipped, the expedition began to move on the 21st May, 1773; but being detained by contrary winds, could not quit the Nore till the 4th June. The last object seen on land was Whitby Abbey; and Captain Phipps then steered into the mid-channel of the German Ocean, endeavouring to avoid equally Norway and Shetland. In sixty degrees of latitude the sun set about twenty minutes past nine; the clouds making a beautiful appearance by its reflection from below the horizon. In latitude 66°, on the 19th June, that luminary, even at midnight, was still visible. Captain Phipps here undertook to make deeper soundings than were ever known to have been before attempted; and with a very heavy lead he reached 780 fathoms. The temperature at that depth was 26° Fahrenheit, while in the air it was 48°. Trial was now made of Dr Irving's apparatus, which was considered completely successful, inasmuch as it was found to produce a sufficient quantity of perfectly good water either for drinking or cooking, without any inconvenient expense of fuel. This favourable opinion has not been confirmed by nautical experience; and the practice, chiefly, we believe, from the quantity of fuel required, has never come into general use.

On the 27th June the navigators found themselves in the latitude of the southern part of Spitzbergen, without any appearance either of ice or land. On the 29th they saw the shore, and stood close in with it. This coast "appeared to be neither habitable nor accessible; for it was formed by high barren black rocks, without the least mark of vegetation; in many places bare and pointed; in other parts covered with snow, appearing even above the clouds: the valleys between the high cliffs were filled with snow and ice. The prospect would have suggested the idea of perpetual winter, had not the mildness of the weather, the smooth water, bright sunshine, and constant daylight, given a cheerfulness and novelty to the whole of this striking and romantic scene." The mariners enjoyed fine weather in sailing along this bold and lofty coast, and measured the height of several of the mountains, one of which was found to be 4500 feet. On the 30th June they learned from the master of a Greenland vessel, that the ice lay sixteen leagues off to the westward, and that one Dutch and two English ships had been lost in the course of the season.

In the first days of July, Captain Phipps continued to steer along the coast of Spitzbergen, passing several Greenland ships busily engaged in the fishery. On the 4th he came to Magdalena Hoek, near which he landed, and began observations upon the variation of the compass, which were soon interrupted by a thick fog. Being informed by the Rockingham Greenland ship, that the ice was ten leagues off Hakluyt's Headland, he determined to steer for that north-western extremity of Spitzbergen. On the 5th, as he was avoiding certain islands off Danes Gat, something white was seen amid the mist, and a noise was heard as of surf breaking upon the shore. The commander, desiring the Carcass to keep close to him, determined to stand for it, and see what it was. Ere long, amid thick fog, the crews saw an object on their bow, partly black, and partly covered with snow, which they at first mistook for islands, but which soon proved to be the main body of the ice, on which wind and sea were beating with violence, and from which they could not have escaped, except by constant change of tack, and by the utmost alertness of officers and men.

Captain Phipps, finding himself now upon the main northern ice, and being informed that it extended, unbroken, to the north-west, determined to move eastward,—a direction seldom taken by the whale-fishers, and where he hoped to find some opening to them unknown. Continuing to work his way against the wind, between the ice and the land, he passed first Hakluyt's Headland, then Vogel Sang, and on the 7th found himself approaching the bold pinnacle of Cloven Cliff,—a remarkable promontory, named from its resemblance to a cloven hoof, and which, from its perpendicular form, is never covered with snow. Here, as the frozen masses increased in number and size, and fresh ice was forming on the surface of the sea, the officers and men, after full deliberation, concluded it vain to attempt penetrating in this direction. They were farther discouraged, by considering that this was nearly the place in which all previous navigators had been checked in their efforts to reach the Pole. Captain Phipps therefore determined to stand to the westward, cherishing some hopes of a passage in that direction. He had a dreary run, immersed in fogs so thick, that the ships, even when very near, could not see each other. A number of the crew, notwithstanding an extra allowance of wine and spirits, became affected with rheumatic colds and pains in the bones. Having made ten degrees to the westward, without the least appearance of an opening, the commander determined again to try the east, in the hope that the continuance of warm weather might have dissolved the barriers which had formerly arrested his progress. On the 12th July the navigators were again in the vicinity of Cloven Cliff, and found a good harbour on the island, to which it is attached by a narrow isthmus. Here they obtained abundance of water, and, notwithstanding the fog, made some important celestial observations; taking the bearings and altitudes of the principal objects on the coast. In endeavouring to push on, however, Captain Phipps was again stopped at nearly the same point as before; finding the ice locked in with the land, and no passage either to the east or north. He turned once more in despair westward, and kept close to the main ice, pushing into all its openings, some of which, being nearly two leagues long, afforded hopes of a passage; but they proved to be only ice-bays. Near Hakluyt's Headland the ships suffered a severe pressure between a loose fragment of ice and the main body. The commander now found it very unsafe to proceed before an easterly wind, which brought in all the loose pieces, and drove them against the great mass, making it resemble a rocky shore; and it proved both easier and safer to sail against the wind. Captain Phipps resolved, in spite of repeated repulses, to make another effort to the eastward; and this time he had some success. Making way through the loose fragments, he came to an open sea, stretching north-east, which inspired the most flattering hopes. The coast was neither so lofty nor exhibited the same dark monotonous aspect as the one he had just passed; the tints, being more varied and having more of the natural colour of earth, had caused the early navigators to give to different points the names of Red Beach, Red Hill, and Red Cliff. At length he reached Moffen, an island low and flat, covered with numerous flocks of wild fowl. He continued two days longer to sail through an open sea, meeting only loose floating masses, till, on the 27th, he was stopped by the main body of the ice lying east and west. He then coasted it to the eastward, pushing the ship, by a press of sail, into the icy bays or openings, notwithstanding the large loose pieces by which these were encumbered. On the 29th July the expedition reached a low flat island, larger than Moffen, clothed with moss, and filled with deer and various animals. They found on the shore large fir-trees, some 70 feet long, partly torn up by the roots, partly cut down by the axe, and fashioned into different shapes, but all perfectly entire. Two of the officers engaged in an encounter with a walrus, from which they came off with little honour. The animal being single, was wounded in the first instance; but he immediately plunged into the deep, and came up with a large body of his fellows, who made a united attack upon the boat, wrested an oar from one of the men, and had nearly overset her, when another boat from the Carcass, under the command of Nelson, came to her relief.

From the point which the discoverers had now reached, they saw that remote peninsula of Spitzbergen which the Dutch call North-east-land, and beyond it the range of the Seven Islands. The ice, however, began to gather round them, and Captain Lutwidge, on mounting the top of a high island, saw to the east and north-east one continued frozen surface, bounded only by the horizon. The ships were now becalmed amid a beautiful and picturesque scene; the immense field of ice being covered with snow, except that some pools of water were coated with a thin newly-formed crust. The mariners attempted in vain to make any sensible progress eastward; the ice closed fast, and no opening was anywhere seen, except for about a mile and a half round the ships. The pilots, who had never before proceeded so far, were seriously alarmed lest they should be beset. Nor were their fears groundless, for next day the ships were frozen in faster than ever, not having room to turn, while the passage by which they had entered from the westward had entirely closed up behind them. The adventurers had then no room for farther consideration, but how to extricate themselves and return home. They began sawing through deep ice, where it was sometimes twelve feet thick; and these laborious efforts only enabled them to move three hundred yards westward; while the mass within which they were enclosed was moving eastward, carrying them along with it. In these circumstances, Captain Phipps conceived no time was to be lost in putting out the boats and dragging them over the ice, with the view of reaching the Dutch ships, which usually began about this time to direct their course homewards. On the 7th August the boats were got forward two miles; and the commander, on his returning to the ships, finding the ice round them a little more open, caused all sails to be set, by which means they were made to move forward, though slowly, and still counteracted by the drift-ice. Being favoured, however, by moist and foggy weather, their progress became more rapid. They came up with the boats, and took them in; and on the 10th, having a brisk gale from the north-east, they forced the ships through all obstacles, though not without sustaining many heavy strokes, and breaking the shank of their best bower-anchor; but about noon they found themselves in the open sea.

Being thus delivered from their greatest fear, they repaired to the harbour of Smeerenberg for rest and refreshment. In its vicinity they admired a very lofty iceberg, which presented to the sea a perpendicular face nearly 300 feet high, of a fine light-green colour, and down which a cascade was pouring. "The black mountains, white snow, and beautiful colour of the ice, made a very romantic and uncommon picture." A large fragment, which had fallen into the sea, floated out, and grounded in twenty-four fathoms: it stood fifty feet high, and was of the same beautiful colour as the iceberg.

Captain Phipps, before quitting the Polar world, made some general remarks on the phenomena which it presents. He observed always a great swell near the edge of the ice; but, whenever he was enclosed among its loose fragments, the sea was perfectly smooth. According to Hudson, the green waters were free from ice, which was found only in the blue; but no ground was now seen for this distinction, nor does there probably exist any. Marten described the sun at midnight as resembling the moon in appearance; but our observers could see no difference, except what arose from its being lower in the heavens.

On the 19th August, Captain Phipps weighed for England, and on the 24th was somewhat surprised by the sight of Jupiter, no star having for a long time been visible amid the perpetual light of the northern sky. After passing Shetland on the 7th September, he met with a series of very heavy gales, during which he lost three boats, and was obliged to throw two guns overboard. However, having reached Orfordness on the 24th, he proceeded without farther difficulty to the Nore.

The result of this voyage, which was considered as having been made under fair and even favourable circumstances, tended altogether to chill the hopes of penetrating nearer to the great northern boundaries of the earth. It seemed that, from the eightieth degree, ice in one unbroken field stretched to the Pole, and that its margin presented an impenetrable wall to the navigators of the Greenland Sea. Disappointed hope was followed, as usual, by a suspension of interest; and the northern realms had sunk almost into oblivion, till the revival of the recent spirit of discovery. Public attention was first recalled to them by Mr Scoresby, who, bred as a practical whale-fisher, had been nursed as it were amid the tempests and snows of the north, and had observed their aspects with an intelligent and scientific eye, very unusual among those who pursue so rough and bustling a trade.

In 1806 this gentleman made the nearest approach to the Pole that has ever yet been fully authenticated; for the statements of the Dutch, and other navigators, who boast of having gone much nearer, are subject to great doubt as to their observations of latitude. Mr Scoresby was then acting as mate under his father, who commanded a Greenland ship. They at first proceeded by Jan Mayen into the western bight, where the seal-fishery is carried on; but afterwards they changed their purpose, and came round to the whale-bight. They found the waters encumbered, even in a low latitude, by much broken ice, through which they made their way not without some danger. They then reached an open sea, so extensive that its termination could not be discovered, and it was believed to extend four or five hundred square leagues. On proceeding northward, however, they soon arrived at a very close continuous field, consisting of bay-ice compacted by drifting fragments. They pushed their way through it by the most laborious exertions,—towing, boring, warping, and *mill-dolling*,—a process which consists in the use of a sort of battering-ram. Having thus opened a path across a very extended barrier, they came, almost beyond hope, to an open sea, which appeared nearly unbounded, having only the ice on the south and the land on the east. Their object was to catch whales; and, following their primary purpose, they chose a west-north-west direction. Swiftly crossing the short meridians of this parallel they soon passed from the 10th degree of east to the 8th degree of west longitude. Their latitude was 79° 35′, and the sea was still open on every side. As whales, however, were wanting, they changed their tack, and ran east-north-east about 300 miles, till they came to the 19th degree of east longitude; and here they found themselves in lat. 81° 30′, being a degree higher than Phipps had reached, and only about 500 geographical miles from the Pole. Had discovery been their object, they had now a brilliant opportunity; and neither master nor mate would have been insensible to the glory of acquiring enlarged knowledge of these utmost boundaries of the earth. But they had been fitted out by a mercantile body to bring home a cargo of whale-oil, and this solid purpose could not be postponed to the most brilliant speculations of science.

The sea lay vast and open before them; but, as it contained no whales, it behoved them to steer their course backwards towards Hakluyt's Headland, in the vicinity of which they caught twenty-four of those valuable animals, from which were extracted 216 tuns of oil.

Mr Scoresby indulged his curiosity by landing on some of the insular tracts which fill the depths of the Polar sea, and clambering up the lofty steeps which usually rise from their shores. Charles's Island, or Fair Foreland, at the north-west of Spitzbergen, was the first Arctic ground on which he landed; but the fog soon spread so thick, that he could remark little except the immense multitude of birds which clustered around the rocks and precipices. Afterwards, in 1818, he landed near Mitre Cape, and undertook to reach the summit of that singularly insulated cliff of which it consists. Much of the ascent was over fragments of rock so loose, that the foot in walking slid back every step, and the party could make no progress but by the very laborious operations of running and leaping. The continuance of frost appears to cause this extraordinary decomposition of the rocky substance. At one place they found a ridge so steep, that Mr Scoresby could seat himself across it as on the back of a horse. They reached the summit, estimated at 3000 feet high, about midnight, when the sun still shone bright on its snow-capped pinnacle, causing such a rapid dissolution, that streams of water were flowing around them. It is considered remarkable, that, in this frozen region, where, even at a moderate elevation, the mean annual temperature must be below the freezing-point, the highest summits should put off their winter-covering of snow, in which so many peaks, both of the temperate and of the torrid zones, are perpetually enveloped. It would appear, however, that during the short interval of continuous summer-day, the rays of the sun, beating perpetually on the mountain-tops, which are raised above the fogs that surround the watery surface, produce a degree of heat much greater than corresponds with the latitude. Hence the general average of the year, and especially the part which composes the long Arctic night, must be marked by a fearful depression.

The view from this summit is described by Mr Scoresby as equally grand, extensive, and beautiful. On the east side were two finely-sheltered bays; while the sea, unruffled by a single breeze, formed an immense expanse to the west. The icebergs reared their fantastic forms almost on a level with the summits of the mountains, whose cavities they filled, while the sun illumined, but could not dissolve them. The valleys were enamelled with beds of snow and ice, one of which extended beyond reach of the eye. In the interior, mountains rose beyond mountains, till they melted into distance. The cloudless canopy above, and the position of the party themselves, on the pinnacle of a rock, surrounded by tremendous precipices, conspired to render their situation equally singular and sublime. If a fragment was detached, either spontaneously or by design, it bounded from rock to rock, raising smoke at every blow, and setting numerous other fragments in motion, till, amid showers of stones, it reached the bottom of the mountain. The descent of the party was more difficult and perilous than the ascent. The stones sunk beneath their steps, and rolled down the mountain, and they were obliged to walk abreast, otherwise the foremost might have been overwhelmed under the masses which those behind him dislodged. Finally, to the astonishment and alarm of the sailors beneath, Mr Scoresby and his companions, in a part of their descent, slid down an almost perpendicular wall of ice, and arrived in safety at the ships. The beach was found nearly covered with the nests of terns, ducks, and other tenants of the Arctic air, in some of which there were young, over whom the parents kept watch, and, by loud cries and vehement gestures, sought to defend them against the gulls and other predatory tribes hovering around. Several sailors who had robbed these nests were followed to a considerable distance with loud and violent screams.

Mr Scoresby, also, in 1817, landed, and made an excursion on Jan Mayen's land. The most striking feature was the mountain Beerenberg, which rears its head 6870 feet above the sea; and, being seen to the distance of thirty or forty leagues, proves a conspicuous landmark to the mariner. The first object which attracted the eye were three magnificent icebergs, which rose to a very great height, stretching from the base of Beerenberg to the water's edge. Their usual greenish-grey colour, diversified by snow-white patches resembling foam, and with black points of rock jutting out from the surface, gave them exactly the appearance of immense cascades, which in falling had been fixed by the power of frost. A party ascended a mountain which composed only the base of Beerenberg, yet was itself 1500 feet high. They were not long in discovering that the materials composing this eminence were entirely volcanic. They trode only upon ashes, slag, baked clay, and scoriæ; and, whenever these substances rolled under their feet, the ground beneath made a sound like that of empty metallic vessels or vaulted caverns. On the summit they discovered a spacious crater, about 600 feet deep and 700 yards in diameter, the bottom of which was filled with alluvial matter, and which, being surrounded by rugged walls of red clay half-baked, had the appearance of a spacious castle. A spring of water penetrated its side by a subterranean cavern, and disappeared in the sand. No attempt was made to ascend Beerenberg, which towered in awful grandeur, white with snow, above the region of the clouds; but at its feet was seen another crater surrounded by an immense accumulation of castellated lava. A large mass of iron was found, that had been smelted by the interior fires. The volcano was at this time entirely silent, but Mr Scoresby next year saw smoke rising from it to a great height; and the same phenomenon had, in 1818, been discerned by Captain Gilyott of the Richard, who even remarked a shining redness like the embers of a large fire.

The most important discoveries, however, effected by Mr Scoresby, took place in 1822, when he sailed in the ship Baffin, of 321 tons and 50 men, for the whale-fishery. He departed from Liverpool on the 27th March, and on the 28th passed the Mull of Cantyre, but immediately after encountered a violent gale, which, blowing on this dangerous coast, obliged him to take shelter for ten days in Loch Ryan. This interval of leisure was improved, according to his laudable custom, for purposes of scientific experiment; and in this instance he had particularly in view the improvement of the chronometers used in navigation. On the 8th April he again set sail; passed on the 10th the dangerous rocks and islands of Skerivore, west of Tiree; and on the 11th, at noon, saw the island of St Kilda. On the 14th, when only in lat. 64 deg. 30 min., the cry was raised that ice was in sight, and the mariners were soon involved in its streams, accompanied with the usual dense and deep obscurity of Arctic fogs. On the morrow they were stopped by an extensive patch, which they spent several days in vainly attempting to double; but at length, setting all sail on the ship, they made their way through it in the course of an hour. They now proceeded northward with a fair wind, observing the brilliant phenomenon of the Aurora Borealis, and seeing the ocean covered with large quantities of drift-wood. On the 25th April, in lat. 75°, they found themselves in the region of continued day, and being now in "a fishing latitude," took out their boats, coiled their lines, and prepared the harpoons, lances, and other apparatus. On the 27th they reached the 80th degree, and were within ten miles of Hakluyt's Headland without having yet felt any frost. Continuing to approach the Pole, Mr Scoresby reached, on the 28th, the main northern ice at the same point where it had been found by Lord Mulgrave. He proposed to run along it to the eastward, in hopes of reaching a good fishing station, but the state of the wind compelled him to turn in the opposite direction. On the 6th May the first whale was taken. On the 9th a heavy gale from the north-east produced symptoms of cold, similar to those felt in the extremity of an

Arctic winter; the skin adhering to metallic substances; water spilt within three feet of the cabin-fire converted into ice; even a mug of good beer nearly frozen at the very foot of the stove. Mr Scoresby's situation was painful; the sea was covered with such a dense stratum of frost-rime, reaching to the height of 50 feet, that nothing could be seen from the deck; and he could not guide the ship without mounting the topmast, where the view was clear, but the temperature was from 3 to 8 degrees below zero, which the gale rendered most intensely piercing. Soon after, being involved in floating ice, he had a most difficult course to steer, though he observes that, to a true navigator, the high exertion of nautical skill required to perform the continual evolutions and changes of course necessary amid floating ice is productive of peculiar enjoyment; and accordingly he extricated himself without any material damage.

Mr Scoresby finding no whales in his present station, determined upon a change. For some time past these high latitudes, probably in consequence of having been so long *fished*, had become nearly unproductive, and the only good cargoes were obtained by penetrating through the ice to the eastern shores of Greenland. A trip in this quarter coincided with another object in which Mr Scoresby felt peculiar interest. The whole range of this coast was absolutely unknown, unless at a few points, which the Dutch had approached and named; and it formed a continuous line with that on which the colonies of Old Greenland, the subject of much interest and controversy, were supposed to have been situated.

In this course Mr Scoresby was amused by striking instances of the refractive power of the Polar atmosphere, when acting upon ice and other objects discerned through its medium. The rugged surface assumed the forms of castles, obelisks, and spires, which here and there were sometimes so linked together, as to present the semblance of an extensive and crowded city. At other times it resembled a forest of naked trees; and Fancy scarcely required an effort to identify its varieties with the productions of human art;—sculptured colossal forms, porticoes of rich and regular architecture,—even with the shapes of lions, bears, horses, and other animals. Ships were seen inverted, and suspended high in the air, and their hulls often so magnified as to resemble huge edifices. Objects really beneath the horizon were raised into view in a most extraordinary manner. It seems positively ascertained, that points in the coast of Greenland, not above 3000 or 4000 feet high, were seen at the distance of 160 miles. The extensive evaporation of the melting ices, with the unequal condensation produced by streams of cold air, are considered by Mr Scoresby as the chief sources of this extraordinary refraction.

It was on the 8th of June that, in 74° 6′ north latitude, a vast range of land was discovered, extending from north to south about ninety miles, and of which the most northerly point was concluded to be that named on the charts Gale Hamkes' Land, while the most southerly appeared to be Hudson's Hold-with-Hope. Mr Scoresby's ambition, however, to mount some of its bold crags, which no European foot had ever trod, was defeated by the interposition of an impassable barrier of ice; and a similar one having closed in behind him, he was obliged to sail back and forward for several days through a narrow channel. During this interval he had a good opportunity of taking the bearings and directions of this great line of coast. The latitude, as given in the maps, was tolerably correct, and was indeed his only guide in tracing the positions; for the longitude, after the most careful observation, was found to differ seven degrees from the best charts, and ten degrees from those usually supplied to the whale-fishers. This coast was generally mountainous, rugged, and barren, bearing much resemblance to that of Spitzbergen, though less covered with snow. It could not be fully ascertained whether some low ground might not be interposed between the sea and the mountains; but their aspect, and the general analogy of the Arctic shores, suggested the idea that these mighty cliffs dipped perpendicularly into the waves.

Mr Scoresby followed the usual system of naming the prominent objects either after persons eminent in science or after his private friends. The two principal bays or inlets were designated from Captain Kater and Sir Walter Scott; while two spacious forelands or projecting peninsulas, the former supposed to be an island, were assigned to Dr Wollaston and Sir Everard Home. Other bays and capes were bestowed upon Sir Thomas Brisbane, Dr Brinkley, Colonel Beaufoy, Dr Holland, Mr Herschel, and some of the author's personal friends. Afterwards, obtaining the view of some smaller bays to the south, he was enabled thus to compliment Sir George Mackenzie, Sir Charles Giesecke, Baron Humboldt, M. de la Place, and M. Freycinet.

Mr Scoresby now made a movement eastward in search of whales, of which he found no traces in the vicinity of land. This change of purpose was attended with a very distressing circumstance. William Carr, one of his most expert harpooners, and a fine active fellow, had struck a whale, which flew off with such rapidity, that the line was jerked out of its place, and threatened the sinking of the boat. Having snatched the rope to replace it in the proper position, he was caught by a sudden turn, instantly dragged overboard, and plunged under water to rise no more. The boat having at once righted itself, the sailors looked round and asked, "Where is Carr?" One man only had seen him disappear, but so instantaneously, that he had merely missed the object, without being able to say how. The distress and agitation of the survivors afforded the stricken whale a respite, of which he availed himself to effect his escape. Mr Scoresby, deeply distressed, took the opportunity next Lord's day of calling the attention of his crew to their own most important interests, and to their preparation for such a catastrophe as had befallen their comrade; on which occasion all the sailors seemed much affected.

About a month was passed in searching for whales at a little distance from the shore, and several of these animals, as well as narwals, were taken; but as they ceased to appear, it was resolved again to stand in for the land. On the 19th July the navigators came in view of a range of coast, of a very bold and peculiar character, extending about forty miles. It presented a mountain-chain from three to four thousand feet high, rising at once from the beach in precipitous cliffs, which terminated in numberless peaks, cones, and pyramids, with sharp and rugged rocks everywhere jutting out from their sides. From one of the mountains rose six or seven tall parallel chimneys, above each other; one of which, crowned with two vertical towers, was called Church Mount. This coast received the name of Liverpool; while to the mountains was given that of Roscoe. The range of shore terminated at Cape Hodgson; beyond which, however, steering south-west, they descried three other promontories, to which were successively given the names of Cape Lister, Cape Swainson, and Cape Tobin. Here Mr Scoresby took, for the first time, the opportunity of landing, when he found the beach much lower than that farther to the north, and consisting in a great measure of loose stony hills. After some examination, he came, near Cape Swainson, to an enclosure formed by parallel walls, similar to those which the Esquimaux construct for their summer huts, and within which were hollow structures like bee-hives, such as they use for stores. A narrow scrutiny showed remains of fuel, charred drift-wood, half-burnt moss and ashes; which last was considered as indicating the place to have been occupied at no distant period. There were also found instruments of wood and bone, one of them tipped with iron.

Resuming their course at sea, and still holding south-westward, there now appeared a spacious inlet, to which, in looking upwards, no termination could be seen. Mr Scoresby, while penetrating this inlet, discovered another sound branching to the northward, behind the Liverpool coast, and supposed to form it into an island. The opposite shore of this entrance was named Jameson's Land, from the eminent professor of natural history at Edinburgh. Beyond Cape Hooker, the southern point of Jameson's Land, another large inlet stretched towards the north, to which was given the name of Captain Basil Hall. It had every appearance of converting Jameson's Land also into an island. The coast to the westward of this last approach received the name of Milne's Land. Between Cape Leslie, the northern point of Milne's Land, and Cape Stevenson, on the opposite shore, the original opening continued to stretch into the interior, without any appearance of a termination. Combining this observation with the position of Jacob's Bight in the same latitude on the western coast, which Sir Charles Giesecke traced to the height of 150 miles, where it opened into a sort of inland sea, there appeared a strong presumption, that, instead of the continuous mass of land which our maps represent, Greenland composes only an immense archipelago of islands. To this great inlet, the entrance of which was bounded by Cape Tobin on the north, and Cape Brewster on the south, Mr Scoresby gave the name of his father, though posterity will probably be apt to associate with himself the name of "Scoresby's Sound."

These coasts, especially that of Jameson's Land, were found richer in plants and verdure than any others seen by our navigator within the Arctic circle, and almost meriting the appellation of Greenland. The grass rose in one place to a foot in height, and there were meadows of several acres that appeared nearly equal to any in England. Nowhere could a human being be discovered; but everywhere there were traces of recent and even frequent inhabitation. At the foot of a range of cliffs, named after Mr Neill, secretary to the Wernerian Society, were several hamlets of some extent. The huts appear to have been winter-abodes, not constructed of snow-slabs like those of the Esquimaux of Hudson's Bay, but resembling those of the Greenlanders, dug deep in the ground, entered by a long winding passage or funnel, and roofed with a wooden frame overlaid with moss and earth. The mansion had thus the appearance of a slight hillock, and seemed quite an underground habitation. Near the hamlets were excavations in the earth, serving as graves, where implements of hunting, found along with the bones of the deceased, proved the prevalence here of the general belief of savage nature, that the employments of man in the future life will exactly resemble those of the present. There was one wooden coffin, which the author was willing to believe might mark a remnant of European colonization. It was thought singular, that the dwellers on this coast should have been recently so numerous, and yet not one of them left; but probably these were winter-quarters, while during the summer the natives had repaired into the interior, where they might find those land-animals which retreat to the southward during the more rigorous season.

On emerging from this large sound and proceeding southward, Mr Scoresby discovered another continuous range of coast, which afforded to him a bay to be named after Mr Wallace, and three capes after Messrs Russell, Pillans, and Graham, eminent professors in the university of Edinburgh; also an island named after Captain Manby; another after Dr Henry, and a cape after Mr Dalton, two distinguished chemists at Manchester; also another cape after Dr John Barclay of Edinburgh.

Disappointed as to any appearance of whales on this coast, Mr Scoresby again steered out to sea and to the northward. Icebergs surrounded him, amounting at one place to the number of five hundred. This course brought him in a few days within sight of lands stretching more northerly than those recently surveyed, and connecting them with the others which he had first discovered. There appeared two large territories, seemingly insular, to which were given the names of Canning and Traill. Between them was a most spacious inlet, honoured with the name of Sir Humphrey Davy. On penetrating this opening there arose several points of land, probably islands, which afforded a range of mountains, made commemorative of Werner, the celebrated geologist; a smaller ridge was assigned to Dr Fleming; after which were appropriated Capes Biot, Buache, Carnegie. He landed on Traill Island, and with incredible toil clambered to the top of a hill, where he hoped to have found a small plain containing a few specimens of Arctic vegetation; but this summit was steeper than the most narrowly-pitched roof of a house, and, had not the opposite side been a little smoother, he would have found much difficulty in sliding down. Beyond Traill Island, and separated from it by a considerable inlet named after Lord Mountnorris, was another coast; the pointed extremity of which received the name of Captain Parry. This promontory being at no great distance from Cape Freycinet, which had been seen in the first survey, there was thus completed the observation of a range of four hundred miles of coast, formerly known only by the most imperfect rumours and notices, and which might therefore be strictly considered as a new discovery.

Mr Scoresby afterwards approached more closely to Canning Island, and penetrated a sound between it and the main, connected apparently with Hurry's Inlet, and where he gave names to Capes Allan, Krusenstern, and Buch.

Our navigator would have been happy to examine more of the Greenland coast, having on one occasion had a fair prospect of being able to run southward to Cape Farewell: but the ship was not his own, and his destination being to catch whales, compelled him to turn in another direction. He had met hitherto with much disappointment in this pursuit; and, the season being far advanced, was apprehensive of being obliged to return with a deficient cargo. But on the 15th of August numerous whales appeared round the ship: of these five were struck and three taken, which at once rendered the ship *full-fished*, and placed him among the successful adventurers of the year. He could return, therefore, with satisfactory feelings; and the pleasure of the voyage homeward was only alloyed by the occurrence of a violent storm off Lewis, in which Sam Chambers, one of the most esteemed of his sailors, was washed overboard.

To these discoveries of Mr Scoresby some additions were made next year by Captain Clavering, who was employed by the Admiralty to convey Captain Sabine to different stations in the Arctic sea, for the purpose of making observations on the comparative length of the pendulum as affected by the principle of attraction.

Captain Clavering sailed on the 3d May, (1823,) and on the 2d June arrived at Hammerfest, where he landed Captain Sabine with the tents and instruments. The observations being completed, he sailed on the 23d, reached the northern coast of Spitzbergen, and fixed on a small island between Vogel Sang and Cloven Cliff for farther scientific operations. While Captain Sabine was employed upon the island, he endeavoured to push into a more northern latitude; but, after great exertion, he could not reach beyond 80 2′. Accompanied by the former, whom he had now joined, and whose observations were completed, he left this coast on the 22d July, and steered for the eastern shores of Greenland, of which he came in view on the 5th August. The scene appeared the most desolate he had ever beheld. The mountains rose to the height of several thousand feet, without a vestige of vegetation, or the appearance of any living creature on the earth or in the air. Even the dreary waste of Spitzbergen appeared a paradise to this. He landed Captain Sabine and the scientific apparatus on two islands detached from the eastern shore of the continent, which he called the Pendulum Islands, and of which the outermost point is marked by a bold headland, rising to the height of 3000 feet.

While Captain Sabine was employed in his course of observations, Captain Clavering surveyed a part of the coast which lay to the northward, being the first which Mr Scoresby saw. It was at some distance, with an icy barrier interposed; but was found indented with deep and spacious bays, suspected even to penetrate so far as to convert all this range of coast into a cluster of large islands. The inlet, which the former navigator had assigned to Sir Walter Scott, was believed by Clavering to be that discovered by the Dutch mariner Gale Hamkes; but we have not ventured to remove this last from the more northerly position fixed by Mr Scoresby. Other openings which occurred in proceeding towards the north were named, by the Captain, Foster's Bay, Ardincaple and Roseneath Inlets; and he saw bold and high land still stretching in this direction as far as the seventy-sixth degree of latitude.

In regard to the natives, Captain Clavering was more fortunate than his predecessor, who saw only their deserted habitations. On landing at a point on the southern coast of Sir Walter Scott's Inlet, he received intelligence of Esquimaux having been seen at the distance of a mile, and hastened thither with one of his officers. The natives on seeing them immediately ran to the top of some rocks; but the English advanced, made friendly signs, deposited a mirror and a pair of worsted mittens at the foot of the precipice, and then retired. The Esquimaux came down, took these articles, and carried them away to the place of their retreat; but they soon allowed the strangers to approach and accost them, though their hands when shaken were found to tremble violently. By degrees confidence was established, and they followed the English to their own tent, five feet high and twelve in circumference, composed of wood and whalebone. Their aspect and conformations, their boats and implements, exactly corresponded to those observed by Captains Parry and Lyon in Hudson's Bay. A child, after being diligently cleared of its thick coating of dirt and oil, was found to have a tawny copper-coloured skin. The natives were astonished and alarmed beyond measure by the effect of fire-arms. A seal being shot, one of them was sent to fetch it. He examined it all over till he found the hole made by the ball, when, thrusting his finger into it, he set up a shout of astonishment, dancing and capering in the most extravagant manner. Another was prevailed upon to fire a pistol ; but instantly on hearing the report, started and ran back into the tent.

The observations were not completed till the beginning of September, when the season was too late to allow Captain Clavering to gratify his wish of making a run to the northward. Nor did he extricate himself from the ice without some severe shocks ; yet, after spending six weeks at Drontheim, he entered the Thames in the middle of December.

We have departed somewhat from the regular order of time, for the purpose of giving in a connected view the observations and discoveries of Mr Scoresby, and the additions to them by Captain Clavering. Meantime, however, another grand attempt had been made to explore the depths of the Polar sea. Combined with Captain Ross's mission in search of the north-west passage, the Dorothea and Trent were placed under the command of Captain Buchan, with the view of pushing direct to the Pole, and endeavouring not only to reach that grand boundary, but to pass across it to India,—a voyage which, from the relative position of these two parts of the globe, would have been much shorter by this route than by any other. It was contended by the supporters of this undertaking, that the failures of Hudson, Fotherby, and Phipps, had occurred in consequence of their being entangled in the winding shores and bays of the northern coast of Spitzbergen; that the production of ice took place chiefly in the neighbourhood of land; and that, by keeping decidedly in the midst of the ocean-channel, navigators would, instead of a boundless and unbroken field, find an open and navigable sea.

Captain Buchan having set out early in the season of 1818, came on the 27th May in view of Cherie Island. Without pausing there, he stretched along the western coast of Spitzbergen, to the eightieth degree of north latitude, where he encountered a severe storm, which separated his vessels for a time, and obliged them to seek shelter in Magdalena Bay. On the 10th June he met several Greenland ships, and was informed by the masters, that in the great sea to the westward, to which he had looked with the greatest hope, the ice was completely impenetrable. He determined, therefore, to turn Hakluyt's Headland, and proceed north-eastward in the track ultimately followed by Lord Mulgrave. On his way he was soon completely beset, being hemmed in by fields of ice ten or twelve miles in circumference, amid which icebergs rose in the rudest and most fantastic forms, appearing like specks in a boundless plain of alabaster. On the 26th June the navigators reached Fair Haven, situated between Vogel Sang and Cloven Cliff. Being detained here for some time, they found numerous herds of the walrus and the deer, and killed, after hard combats, several of the former, one weighing a ton; while of the latter they despatched with ease from forty-five to fifty, the average weight of which was 120lbs. Being at length unable to move forward, they reached the latitude of 80° 32′, where they were beset for three weeks. On the 29th July, the Dorothea was again brought into open water; but on the 30th she was exposed to a tremendous gale, which blew her upon the main body of the ice, with a force which she was unable to resist. In this awful situation, the crew having no time to deliberate, determined to turn the helm so that the wind might drive the ship's head into the ice, where, it was possible, they might find a secure lodgment even amid this fearful tempest. The helm was so placed, and a solemn awe impressed the mariners during the few moments which were to decide, whether the Dorothea was to be safely moored, or to be dashed to pieces. She struck with a terrible shock, which was repeated frequently in the course of half an hour. By that time she had forced her way more than twice her own length into the body of the ice, where she remained immoveably fixed. By and by the gale moderated, and she was again brought into an open sea; but she had been so shattered, and the water entered by such numerous leaks, that scarcely any effort could preserve her from sinking. Next morning, however, being fine, the crew with much difficulty worked her round to the harbour of Smeerenberg. There she was so far refitted as to be able in the beginning of September to take the sea, and on the 10th October came in view of the coast of England, near Flamborough Head.

No farther attempt was made to reach the Pole in *ships;* but, after a certain interval, a plan was devised to push towards that grand boundary in vehicles wafted over the frozen surface of the ocean. It was Mr Scoresby by whom this scheme was first suggested. In a memoir read to the Wernerian Society, he endeavoured to prove that such a journey was neither so visionary nor so very perilous as it might appear to those who were unacquainted with the Arctic regions. The Polar sea in some meridians would, he doubted not, present one continued sheet of ice; the inequalities of which, if tolerably smooth, would oppose no insurmountable barrier. Intervals of open water would be more troublesome; yet the vehicle, being made capable of serving as a boat, might either sail across, or make a circuit round them. This conveyance, he remarked, ought to be a sledge formed of those light materials used by the Esquimaux in the construction of their boats, and drawn either by rein-deer or dogs. The former animals are so fleet, that, in favourable circumstances, they might go and return in a fortnight, while the best dog-team would require five or six weeks; the latter, however, would be more tractable, and better fitted for skimming over thin or broken ice. Though the cold would be very severe, yet as no very alarming increase occurred between the seventieth and eightieth degrees of latitude, there was little ground to apprehend that in the other ten degrees, reaching to the Pole, it should become insupportable. For provisions were recommended portable soups, potted meats, and other substances, which, with little weight, contained much nourishment.

These suggestions did not for a considerable time attract attention; but at length Captain Parry, after his three brilliant voyages to the north-west, finding reason to suspect that his farther progress in that direction was hopeless, turned his enterprising views elsewhere, and conceived the ambition of penetrating over the frozen sea to the Pole. Combining Mr Scoresby's ideas with his own observations, and with a series of reflections derived by Captain Franklin from his extensive experience, Captain Parry formed and submitted to the Lords of the Admiralty the plan of an expedition over the Polar ice. Their Lordships having referred this proposal to the council and committee of the Royal Society, and received a favourable report as to the advantages which science might derive from such a journey, applied themselves with their usual alacrity to supply the Captain with every thing which could assist him in this bold undertaking. The Hecla was employed to carry him as far as a ship could go, and with her were sent two boats, to be dragged or navigated, according to circumstances, along the unknown and desolate expanse between Spitzbergen and the Pole. These boats, being built of successive thin planks of ash, fir, and oak, with sheets of waterproof canvass and stout felt interposed, united the greatest possible degree of strength and elasticity. The interior was made capacious and flat-floored, somewhat as in troop-boats, and a runner attached to each side of the keel fitted them to be drawn along the ice like a sledge. Wheels were also taken on board, in case their use should be found practicable.

The adventurers started early. On the 27th March, 1827, they were towed down the river by the Comet steam-boat, and on the 4th April weighed from the Nore. On the 19th they entered the fine harbour of Hammerfest in Norway, where they remained two or three weeks, and took on board eight reindeer, with a quantity of picked moss for their provender. Quitting Norway on the 11th May, they soon found themselves among the ice, and met a number of whale-ships. On the 13th they were in view of Hakluyt's Headland, when the Captain endeavoured to push his way to the north-east in the track of Phipps. The vessel, however, was soon completely beset, and even enclosed in a large floe, which carried her slowly eastward along with it. As every day was now an irretrievable loss, Captain Parry became impatient in the extreme, and formed a plan to push off northward, leaving the ship to find a harbour for herself, where he trusted on his return to trace her out. But the survey of the route in the proposed direction was most discouraging. In consequence of some violent agitation in the preceding season, the ice had been piled up in innumerable hummocks, causing the sea to resemble a stone-mason's yard, except that it contained masses six times larger. This state of the surface, which would have rendered it impossible to drag the boats more than a mile in the day, was found to prevail for a considerable space with little interruption. The current meantime continued to carry the ship, with the floe to which it was attached, slowly to the eastward, till it brought her into shoals in the vicinity of ice, where she grounded in six fathoms; after which Captain Parry felt it quite out of the question to leave her till she was lodged in a secure harbour. He worked on gradually, however, to the east and north, passing Walden Island, and obtaining a full view of the Seven Islands; but here the sea was covered with one unbroken land-floe attached to all the shores, which destroyed every hope of finding a harbour among these islands. No choice was then left but to steer back for the coast of Spitzbergen, where he unexpectedly lighted on a very excellent harbour, named by him Hecla Cove, and which proved to be part of the bay to which an old Dutch chart had given the name of Treurenberg. It was now the 20th of June, and the best of the season had been spent in beating backwards and forwards on these ice-bound shores; he therefore resolved, without farther delay, to prosecute the main object of his enterprise. Scarcely hoping to reach the Pole, he determined, at all events, to push as far north as possible. He took with him seventy-one days' provision, consisting of pemmican, (beef dried and pounded,) biscuit, cocoa, and rum. Spirits of wine, as the most portable and concentrated fuel, was alone used for that purpose. There were provided changes of warm clothing, thick fur-dresses for sleeping in, and strong Esquimaux boots. The rein-deer and also the wheels were given up at once as altogether useless in the present rugged state of the ice; but four sledges, constructed out of the Esquimaux snow-shoes, proved very convenient for dragging along the baggage.

On the 22d June the expeditionary party quitted the ship, and betook themselves to the boats amid the cheers of their associates. Although all the shores were still frozen, they had an open sea, calm and smooth as a mirror, through which they sailed slowly but agreeably with their loaded vessels. After proceeding thus for about eighty miles, they reached, not, as they had hoped, the main body of the ice, but a surface intermediate between ice and water. This could neither be walked nor sailed over, but was to be passed by the two methods alternately. However, on such a strange and perilous plain it behoved them to land, in order to commence their laborious and monotonous journey towards the Pole.

Captain Parry describes in an interesting manner the singular mode of travelling to which they were compelled to adhere. The first step was to convert night into day; to begin their journey in the evening and end it in the morning. Thus, while they had quite enough of light, they avoided the snow-glare and the blindness which it usually produces; they had the ice drier and harder beneath them; and they enjoyed the greatest warmth, when it was most wanted, during the period of sleep: they were only a little annoyed by frequent and denser fogs. Thus their notions of night and day became inverted. They rose in what they called the morning, but which was really late in the evening, and having performed their devotions, breakfasted on warm cocoa and biscuit. They then drew on their boots, usually either wet or hard frozen; and which, though perfectly dried, would have been equally soaked in fifteen minutes. The party then travelled five or six hours, and a little after midnight stopped to dine. They now performed an equal journey in what was called the afternoon; and in the evening, that is, at an advanced morning hour, halted as for the night. They then applied themselves to obtain rest and comfort, put on dry stockings and fur-boots, cooked something warm for supper, smoked their pipes, told over their exploits, and, forgetting the toils of the day, enjoyed an interval of ease and gaiety. Then, wrapping themselves in their fur-cloaks, they lay down in the boat, rather too close together perhaps, but with very tolerable comfort. The sound of a bugle roused them at night to their breakfast of cocoa, and to a repetition of the same round.

The progress for several days was most slow and laborious. The floes were small, exceedingly rough, and with interposed lanes of water, which could not be crossed without unloading the boats. It was commonly necessary to convey these and the stores by two stages, when the sailors, being obliged to return for the second portion, had to go three times over the same ground; sometimes they were obliged to make three stages, and thus to pass over it five times. There fell as much rain as they had experienced during the whole course of seven years in a lower latitude. A great deal of the ice over which they travelled was formed into numberless irregular needle-like crystals, standing upwards, and pointed at both ends. The horizontal surface of this part had sometimes the appearance of greenish velvet, while the vertical sections, when in a compact state, resembled the most beautiful satin-spar, and asbestos when going to pieces. These peculiar wedges, it was supposed, were produced by the drops of rain piercing through the superficial ice. The needles at first afforded tolerably firm footing; but becoming always more loose and moveable as the summer advanced, they at last cut the boots and feet as if they had been penknives. Sometimes, too, there arose hummocks so elevated and rugged that the boats could only be borne over them, in a direction almost perpendicular, by those formidable operations called "a standing pull and a bowline haul." The result of all this was, that a severe exertion of five or six hours did not usually produce a progress of above a mile and a half or two miles, and that in a winding direction; so that, after having entered upon the ice on the 24th June, in latitude 81 degrees 13 minutes, they found themselves on the 29th only in 81 degrees 23 minutes, having thus made only about eight miles of direct *northing*. Captain Parry soon relinquished all hope of reaching the Pole; however it was resolved to push on as far as possible. The party came at length to somewhat smoother ice and larger floes, and made rather better progress. While the boats were landing on one of these, the commander and Lieutenant Ross usually pushed on to the other end to ascertain the best course. On reaching the extremity, they commonly mounted the largest hummock, whence they beheld a scene of which nothing could exceed the dreariness. The eye rested only upon ice, and a sky hid in dense and dismal fogs. Amid this scene of inanimate desolation, the view of a passing bird, or of ice in any peculiar shape, excited an intense interest, which they smiled to recollect; but they were principally cheered by viewing the two boats in the distance, the moving figures of the men winding with their sledges among the hummocks, and by hearing the sound of human voices, which broke the silence of this frozen wilderness. The rain, and the increasing warmth of the season, indeed gradually softened the ice and snow, but this only caused the travellers to sink deep at every step. At one place they sunk repeatedly three feet, and required three hours to make a hundred yards. As they halted on the evening of the 5th July, the margin of the floe broke, and a bag of cocoa fell into the sea, but luckily alighted on a tongue of ice and was taken up.* At the same time pools and even lakes were formed on the frozen surface; and though the peculiar blue of these superglacial lakes formed one of the most beautiful tints in nature, this was a poor compensation for being obliged to make a great *detour* in order to avoid them. Still, amid all these difficulties, the floes became on the whole larger, the lanes of water longer, and the day's journey was gradually extended. Having attained 82 degrees 40 minutes, they began to hold it as a fixed point that their efforts would be crowned with success so far as to reach the eighty-third parallel. This hope seemed converted into certainty, when, on the 22d, they had travelled seventeen miles, the greater proportion of which was directly north. But there now occurred an unfavourable change, which baffled all their toils and hopes. Down to the 19th the wind had blown steadily from the south, and, without aiding them much, had at least checked the usual movement of the ice in that direction. On this last day, however, a steady breeze sprung up from the north, which opened, indeed, a few lanes of water; but this, it was feared, could not compensate for the degree in which it could not fail to cause the loosened masses of ice, with the travellers upon them, to drift to the southward. This effect was soon found to take place to an extent still more alarming than had been at first anticipated. Instead of ten or twelve miles, which they reckoned themselves to have travelled northward on the 22d, they were found not to have made quite four. This most discouraging fact was at first concealed from the sailors, who only remarked, that they were very long of getting to this 83d degree. The expedition was now fast approaching the utmost limits of animal life. During their long journey of the 22d they saw only two seals, a fish, and a bird. On the 24th only one solitary *rotge* was heard; and it might be presumed that, from thence to the Pole, all would be a mighty scene of silence and solitude. The adventurers pushed on without hesitation beyond the realms of life; but now, after three days of bad travelling, when their reckoning gave them ten or eleven miles of progress, observation showed them to be four miles south of the position which they occupied on the evening of the 22d. The drifting of the snow-fields had in that time carried them fourteen miles backward. This was too much. To reach even the eighty-third degree, though only twenty miles distant, was now beyond the limits of hope. To ask the men to undergo such unparalleled toil and hardship, with the danger of their means being exhausted, while an invisible power undid what their most strenuous daily labours achieved, was contrary to the views of their considerate commander. In short, he determined that they should take a day of rest, and then set out on their return. This resolution was communicated to the crew, who, though deeply disappointed at having achieved so little, acquiesced in the necessity, and consoled themselves with the idea of having gone farther north than any previous expedition of which there was a well-authenticated record

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* It may be mentioned, that the contents of the package here alluded to were found to be quite uninjured after this rude immersion, a protection ascribed to "Mackintosh's water-proof canvass,"—a manufacture which, as a security for sea-stores, is mentioned by Captain Parry in terms of the highest commendation.

The return was equally laborious as the going out, and in some respects more unpleasant, from the increasing softness of the ice and snow; depriving them of confidence in any spot on which they could place their boats or persons, and often sinking two or three feet in an instant. However, the drift southward made no longer any deduction from their progress, but added to it, every observation giving them several miles beyond their reckoning. There was more open water, and it was a relief to them that the sun in their nightly journeying was lower in the horizon; while, being to the northward, he did not, as formerly, glare in their faces. They met several bears, and killed one, which was eagerly devoured by the hungry crew; but the meal was followed by such severe symptoms of indigestion as inspired an unfavourable opinion regarding the flesh of this animal. Captain Parry attributed the bad effects to the enormous quantity eaten. At length, on the 11th August, they heard the sound of the surge breaking against the exterior margin of the great icy field. They were soon launched on the open sea, and reached Table Island, where a supply of bread had been deposited; but Bruin had discovered it, and devoured the whole. They found, however, some accommodations; while the stores left at Walden Island were still quite undisturbed. On the 21st the navigators arrived in Hecla Cove, from whence, soon afterwards, they sailed for England.

Such was the result of the first and only attempt to penetrate to the Pole over the frozen surface of the deep. All the prowess, energy, and hardihood of British seamen were exerted to the utmost, without making even an approach towards the fulfilment of their object. A failure so complete has suspended for the present every idea of resuming the project; yet there seems nothing in the details just given to deter from the enterprise as impossible, or even to render it very unfeasible. The unfavourable issue seems evidently owing to the advanced season of the year, when the thaw and consequent dissolution of the ice had made great progress, and all the materials of the great northern floor were broken up. The water, in its progressive conversion from solid into fluid, presented only a treacherous quicksand, in which the travellers sunk at every step, with the peril of being finally swallowed up. The ice in these intermediate stages of its transition into water, and in the breaches and pressures to which this gave rise, assumed a variety of much more rugged forms, than when it was spread and fast bound over the surface of the ocean. Its tendency also when loosened to float to the southward, carrying with it whatever is moving along its surface, inevitably defeats every attempt to proceed over it in a contrary direction. We entirely concur, therefore, in Mr Scoresby's opinion, that a departure much earlier in the season would be quite indispensable to give any chance of success. We would even go farther than he, and advise to start at the first dawn of the Polar day, when there would be a probable chance of returning by the end of June. The great plain of ice would be much smoother and much firmer at that than at any other season. It would be deeply covered with snow, which would fill various interstices, convert rugged steeps into sloping ridges, and produce a surface generally more level and uniform. This coating, too, would then be much harder, perhaps sufficient to sustain the weight both of the men and boats, and afford everywhere sure and solid footing. Wheels, it is probable, might be employed with advantage, though wholly unfit for that rugged and sinking surface over which Captain Parry was obliged to tread. We are even inclined to ask, whether other machinery might not be beneficially introduced? Could there not be constructed a light portable bridge, to be thrown across chasms and from hummock to hummock, over which the keel of the boats by due adaptation might slide as on a railway, and the evils of friction be avoided?—The cold, doubtless, would be most extreme and intense; but Captain Parry's experience and management during his four winterings seem to have removed every apprehension that it would prove fatal. The boats might be hermetically closed, with winding entrances, like the winter-huts of the Esquimaux; and it was clearly established, that, even in the darkest depths of the Polar winter, provided tempest did not fill the sky, it was possible, and even most salutary, to perform brisk movements in the open air. The travellers would indeed require an addition to their spirituous fuel, not a weighty article; also a larger stock of clothes; but these last it would be every way expedient to wear on their persons. The only circumstance which seems seriously alarming, is an observation made by Captain Parry, that the daily allowance of provision, amounting to ten ounces of biscuit and nine of pemmican, was not found sufficient to maintain the men in full vigour; and truly, when contrasted with their severe toils, it does appear an inadequate supply. It were dreadful indeed to think of sending a party to the Pole on short allowance. The quantity could not well be increased without making the drag too severe; but we cannot help thinking that the victuals selected fulfilled very imperfectly the obvious condition of being such as to comprise the greatest possible nutriment in the least possible bulk. Thus it seems unaccountable that the greater part of the food should have been farinaceous, in the form of dry biscuit, which contains surely much less nourishment than the same weight of animal food. We pretend not to be at all versant in the mysteries of cookery; yet portable soup, for instance, might certainly have been so prepared as to embody a much greater amount of nutritive substance than mere dried and pounded beef; and, if duly seasoned, might have formed a most comfortable mess under the snows of the Pole. The addition of some rich cakes, cheese, and butter, might seem likely to compose a store which, without exceeding in weight that of Captain Parry, would yield a much larger proportion of nourishment and strength.—We should hesitate to recommend Mr Scoresby's plan of being drawn to the Pole by rein-deer, or even of trusting to a team of any description. These animals would be liable to many casualties, and, should they break down at an advanced period of the route, the result might be disastrous in the extreme.

This project would require, of course, that the ship should winter on the northern coast of Spitzbergen; an arrangement, we conceive, indispensable to avoid that delay which had such an influence in frustrating the late expedition. We are surprised to find, that even Captain Parry, after so many successful winterings, considers this as a serious objection. In fact, on seeing it admitted, that before the close of autumn a ship might penetrate to 82°, and perhaps to 83°, we are tempted to ask whether a discovery-vessel might not, in the first season, push forward to that latitude, and find a station either in an island, if such should be found, as has been done before; or, if not, whether it might not enclose itself within one of the great fields of ice, and there await the arrival of spring? A very considerable and probably the roughest portion of the Polar route would thus be avoided.

A different principle from that above suggested has been proceeded upon by Captain Ross, in the Arctic expedition in which he is now engaged. By the power of steam, which has produced such wonders in modern navigation, he hopes to vanquish the obstacles which have arrested in this career all former navigators. Steam, indeed, has no power against ice; but if at any period of the season there should be found an open sea reaching to the Pole, a vessel thus propelled might in a week perform the voyage to and from that great boundary. The doubt whether the waters will ever open to such an extent, and the fear that, having opened and allowed the navigators to pass, the ice may close in behind them, cannot fail to suggest themselves to the reader's mind; but we do not wish at present to indulge in unfavourable augury.

Captain Ross makes this bold attempt solely upon his own resources, and doubtless with the view of effacing the error by which he relinquished to Captain Parry the glory of penetrating by Lancaster Sound into the Polar ocean. He took his departure in the spring of 1829. His vessel, it appears, suffered some damage in the Greenland sea, which he was enabled to repair by the aid of a ship employed in whale-fishing. He proposed, it was understood, to winter in Spitzbergen, and in the course of the present summer to attempt the execution of his grand design. The issue, however, is not likely to be known in this country till a very advanced period of the season.

CHAPTER IX.

The Northern Whale-Fishery.

We have formerly had occasion to notice the great number and stupendous magnitude of those animal forms with which nature has filled the abysses of the Arctic ocean. The cetaceous orders, which include the mightiest of living beings, belong peculiarly, and in some respects exclusively, to those northern depths. Confident in their multitude and their strength, they would for ever have rested peaceful and undisturbed amid the vast and dreary domain which Providence has given them to occupy, had not the spirit of avarice commenced against them a deadly warfare. Man, ever searching the remotest parts of the globe for objects which might contribute to his use and accommodation, discovered, in those huge animals, a variety of substances fitted for the supply of important wants. Even after his more refined taste rejected their flesh as food, the oil was required to trim the winter lamp, and to be employed in various branches of manufacture; while the bone, from its firm, flexible, and elastic quality, is peculiarly fitted for various articles of dress and ornament. No sooner, therefore, had the course of discovery opened a way into the seas of the north, than he discerned the benefits which might be derived from snatching the spoil of these tenants of the frozen waters. He commenced against them a system of attack, that was soon converted into a regular trade, but one more full of adventure and peril than any other by which human subsistence is earned.

It has been generally supposed that whale-fishing, as a commercial pursuit, arose subsequently to the revival of navigation in Europe; but the researches of Mr Scoresby leave no doubt that, on a small scale at least, it existed at a much earlier period. Even the voyage of Ohthere, in 890, shows that its operations were already carried on with some activity on the coast of Norway. Indeed it was natural that, in this native region of the *cetacea*, their capture would commence sooner than elsewhere, and at an era probably ascending far beyond human records. Still this was not the true whale, an animal which never leaves its haunts in the depths of the Arctic zone. It was that species of dolphin called bottle-nose, which alone reaches the northern extremities of Europe; is occasionally stranded on the coasts of Orkney and Shetland; and at times penetrates much farther south.

The Northmen, in their career of conquest and settlement over Europe, introduced on the coast of France the hunting of the whale, which, to these hardy mariners, was at once a trade and a sport; having found in the southern seas an inferior species, attracted thither by the shoals of herrings on which it fed. These smaller fish frequent the Bay of Biscay, to which they seem to make a periodical migration, and where they are arrested by the wide circuit of its shores. Ancient documents prove that the Normans, the Flemings, and even the English, regarded them as a valuable commodity; less, however, for the oil, which in this species is not very abundant, than for the flesh, which satisfied the hunger and even pleased the palate of our rude ancestors. Whales' tongues are ranked among the delicacies that adorned the table of the middle ages.

The bay [illegible] named afforded the chief theatre for this southern whale-fishery, which was almost entirely engrossed by the people inhabiting its interior shores: those of Bearn and Gascony on the French side, and of Biscay on the Spanish. The Basques in particular soon surpassed all other nations, and carried to such perfection the processes connected with this pursuit, that the most expert whale-fishers in modern times have done little more than copy their usages. By degrees they extended their adventures into the northern seas, where they met the people of Iceland, a Norwegian colony, who had already engaged in this trade. Here the Basques and Icelanders, combining their efforts, soon brought the fishery into a very flourishing state.

This, however, was conducted on a small scale, when compared with the enterprise of modern nations. Yet the first northern navigators were not attracted thither by this special object, but stumbled on it, as it were, in the course of their arduous attempts to accomplish a passage to India by the Arctic seas. Barentz, in 1596, discovered Spitzbergen, long the main seat of this fishery, and even examined a considerable extent of its shores; but as these presented an obstruction to his views of reaching India, and as his voyage closed at last in disaster, no other result was obtained beyond a certain knowledge of geography and of the animal kingdom.

The English were the first who pushed their operations into the depth of the Arctic ocean. The Bear Island of Barentz, being rediscovered and named after Alderman Cherie, gave rise to a series of voyages for the capture of the walrus, of which some account has been already given. The views of the merchants were much extended, when Hudson, having engaged in his daring attempt to reach and to cross the Pole, surveyed Spitzbergen or East Greenland even to its northern extremity. Although unable to penetrate further, he gave information regarding the immense number of whales which were seen on those Arctic shores. Thenceforth the adventurers fitted out for Polar discovery were instructed to cover their expenses, as far as might be, by the occasional capture of these valuable animals. This arrangement, as formerly remarked, was not happy, so far as discovery was concerned, since the considerations of profit were very likely to supersede the main object of the voyage. Poole, in 1610, confined his views almost entirely to the capture of the walrus; but as he reported a great abundance of whales, the Company next year sent out the Mary Margaret, furnished with Biscayan harpooners, and with every thing requisite for the great fishery. Captain Edge accordingly succeeded in taking a small whale, which yielded twelve tuns of oil; the first, as he conceives, that was ever extracted in the Greenland seas. The termination of this voyage was unfortunate; yet the Muscovy Company next year sent out two ships, the Whale and the Seahorse, to follow up the design. The Dutch, meantime, intent on every form of commercial adventure, had vessels that very year for the same purpose in the Greenland waters. These our countrymen chose to consider as interlopers, and, being the stronger party, compelled their rivals to decamp, without even attempting the fishery. Next year the same Company obtained a royal charter, prohibiting all besides themselves to intermeddle in any shape with this valuable branch of industry. To make good this privilege, which the Dutch were not disposed to consider well-founded, the Company fitted out seven strong and well-armed ships, whose commanders, on reaching the seas round Spitzbergen, found them filled with ships of different nations, Dutch, French, and Spanish. All these the English compelled either to depart, or to fish under the condition of delivering half of the proceeds to them as the lords of the northern seas. So busy were they, however, in excluding others, that, little time or care being bestowed on their own fishing, they returned very slenderly laden. Foreign nations exclaimed against this interference as a most flagrant example of the tyranny of the new mistress of the ocean; and, indeed, the grounds on which England rested her claim do not appear to have been valid. She alleged the prior occupation made by Sir Hugh Willoughby; but supposing that the mere view, through mist and tempest, of the Spitzbergen coast, could have established a permanent right to rule over the neighbouring waters, this discovery was shown by Peter Plancius, the cosmographer, on the clearest grounds, to have been made by Barentz, and not by Sir Hugh. The commencement of the fishery by the English formed certainly a better claim, yet still by no means sufficient to establish perpetual sovereignty over those vast seas. The Dutch determined not only to refuse acquiescence, but to repel force by force; for which purpose they sent out fleets so numerous and so well armed, that for some years only slight and partial annoyances were sustained by them; while the two governments appear to have looked on and allowed the adventurers to fight it out. At length, in 1618, a general encounter took place, which terminated to the disadvantage of the English, one of whose ships was taken and carried into Amsterdam. The Dutch administration, reluctant to involve themselves in a quarrel with their powerful neighbour, prudently restored the vessel with its lading and crew; bestowing at the same time a reward on the gallant seamen who had made the capture. At length it appeared expedient to put an end to this perpetual collision. There was admitted to be room enough for all the nations of Europe, provided they ceased to annoy each other; therefore a division was made of the coasts and bays of Spitzbergen among such States as had been accustomed to resort to the fishery. The English, allowed to have somewhat of the best claim, were favoured with the first choice; they pitched upon Horizon Bay, Clock Bay, Safety Port, and Magdalena Bay, in the more southern part of the coast, and near the large island called Charles's Foreland. Then followed the other nations in the order of their adjudged rights. The Dutch chose the fine island at the north-west extremity, which they named Amsterdam, with three bays, one of which, between it and the mainland, they called Hollanders' Bay. The Danes and Hamburghers found an island and a bay between the Dutch and English stations, while the French and

Spaniards were obliged to content themselves with Biscayners' Point and other bleak promontories along the northern coast.

The English Russia or Muscovy Company were thus allowed full scope for carrying on the trade, from which they diligently excluded the rest of their countrymen. Their pursuits, however, were probably too various, and their transactions on too great a scale, for permitting them to bestow on this difficult trade that close attention which could alone render it productive. The gains of their fishery were more than absorbed by extensive losses; they gradually limited their transactions, till England scarcely sent a ship to the north, and saw all the markets filled by her industrious rivals.

The Dutch, meantime, succeeded in converting this fishery into a grand source of national wealth. At first, according to the usage of the time, they followed the objectionable system of an exclusive company, though on a somewhat liberal scale. The original body, formed at Amsterdam, was obliged to admit others belonging to Zealand and Friesland, and finally to receive into their number many wealthy individuals of the province of Holland. The nation, having thus invested an immense capital in this trade, and carrying it on with their characteristic prudence and diligence, soon raised it to the highest pitch of prosperity. On their first arrival in the northern seas, the whales were seen extended on the face of the deep without any fear, and presenting themselves, as it were, to the stroke of the harpoon. The only difficulty was to carry them home; for one or two such large animals were sufficient to fill a ship. The Dutch adopted, therefore, the plan of extracting on the spot the oil and bones; thus reducing all the valuable substance into so small a compass, that one ship could convey the produce of numerous whales. They founded the village of Smeerenberg, in the bay of the same name, where fish were discovered in extraordinary abundance. Boilers, tanks, coolers, and all the requisite apparatus, were erected on an immense scale; and this station, during the summer, became crowded and populous, resembling in some degree a northern Batavia. The fishers caught whales without any effort, and had only to carry them two or three miles to the shore, where the oil was extracted. In this dreary corner, too, were enjoyed all the luxuries of life, among which are specially mentioned hot rolls, prepared every morning. A bell was rung, at the sound of which all the inhabitants ran to supply themselves with a dainty that seemed to belong to a different climate. Zorgdrager mentions, that he entered this bay in 1697, and found it occupied by 188 vessels, having on board the produce of 1959 fish.

Under these easy circumstances, the trade, even in the hands of an exclusive company, became an ample source of national wealth. Soon, however, it experienced an unforeseen reverse. The whales, pursued and killed in such vast numbers, learned to dread the assault of that mighty destroyer who had invaded their haunts, undisturbed for so many prior ages. They gradually, and at last almost entirely, deserted Smeerenberg, removing into North Bay, where they were still taken with facility; but much delay was incurred in the conveyance of the carcasses to the former station. From North Bay, also, they gradually receded, and the fishers were obliged to follow them into the open sea, where both the capture and transportation became more and more difficult. These mighty animals relinquished part after part of their native deeps, and were everywhere compelled to give way before a destroying power which they could not otherwise escape. They sought their final refuge near that great bank of ice which forms the western boundary of the Whale-fishers' Bight in the Greenland sea. Hither it behoved the pursuers to follow; where, mooring themselves to frozen fields, they watched with no small hazard the movements of their prey. The expense and delay of conveying their prizes, sometimes 2000 miles, to the harbour of Smeerenberg, becoming very inconvenient, arrangements were made, by which the whale, being fastened to the sides of the ship, was *flensed*, or cleared of its blubber and bone; after which the useless carcass was consigned to the deep. The village then lost every foundation on which its prosperity had rested. The stores, furnaces, capacious vessels, and numerous utensils there deposited, were carried away; hence it is now difficult to trace the spot on which stood that once flourishing settlement. At the same time, the trade, become thus arduous and perilous, and yielding reduced profits, was no longer advantageous to an exclusive body. That once prosperous company was accordingly dissolved, and the fishery thrown open to all who chose to engage in it: and such is the activity of individual enterprise, that, even under a diminished prospect of success, a greater number of ships than ever was fitted out from the ports of Holland.

The English meantime did not remain altogether unconcerned spectators of this immense prosperity on the part of their neighbours. After the Muscovy Company was off the field, another was instituted, under the title of "The Company of Merchants of London trading to Greenland." They subscribed a capital of L.40,000, which was increased successively to L.82,000, though only L.45,000 was actually paid. This undertaking proved mòst disastrous. In nine years the entire capital was lost, and the concern broken up. Its fall is traced by Elking to the usual loose and wasteful management incident to large companies carrying on their concerns by uninterested agents. Men were employed for masters who were entirely unacquainted with the business: they were paid by a fixed salary instead of receiving a share of the produce; hence they used to spend long intervals on shore, amusing themselves with hunting deer, and appropriating to their own use the fruits of the chase. The wreck of the Company's last ship, after the capture of eleven whales, precipitated their ruin.

The legislature, mortified that this trade, which was enriching the neighbouring nations, should prove so fruitless in the hands of Britons, redoubled their encouragements, and exempted from all duty the produce of the national whale-fisheries. Thus favoured, and stimulated by the representations of Mr Elking, the South Sea Company determined to embark in this pursuit a large proportion of their capital. In 1725 they built twelve large and strong vessels, fully equipped with cordage, casks, and fishing implements. These ships went out in spring, and returned with twenty-five fish, which did not quite pay the expense of equipment; however, this, upon the whole, was thought not a bad beginning, and gave hopes of improvement, which were far from being fulfilled. In 1730 twenty-two ships were sent out, and returned with only twelve whales, so that a loss was incurred in that year of nearly L.9000. The following season was little better; and the Company, finding that in eight years they had expended an immense sum, without the least prospect of repayment or profit, threw up the trade altogether.

Notwithstanding these repeated and signal failures, the British government did not relax their zeal. In 1732 a bounty of twenty shillings per ton was granted to every ship exceeding 200 tons employed in the whale-fishery. Several private individuals were thus induced to embark in the trade, and with tolerable success; yet there being still no appearance of its rising to any national importance, the bounty was extended, in 1749, to forty shillings. This produced at length the desired effect. In 1752 the ships sent out amounted to forty sail, including several from Scotland, whose merchants in 1750 had begun to participate in the trade. In 1755 they had increased to eighty-two sail; and in the next twenty years the trade continued in a varying but generally prosperous state. Some regulations were introduced with the view of making it more efficient as a nursery of seamen; and in 1769 it was considered firmly established, after the nation had paid in bounties upwards of L.600,000, then reckoned an enormous sum. These considerations induced the legislature, in 1777, to reduce the rate to thirty shillings; but the fishery could not support itself on this encouragement, and the vessels employed fell, between the years 1775 and 1781, from 105 to

39. The allowance of forty shillings being restored, it regained its full prosperity, which soon appeared so steady as to admit the reduction of the bounty; the total amount of which, paid down to 1786, had not fallen short of L.1,266,000. It was therefore reduced in 1787 to 30s.; in 1792 to 25s., and in 1795 to 20s. Even under this lowest grant the fishery increased; able and intelligent whale-captains were formed, and Britain soon outstripped all other nations in a pursuit, in which her first steps had been so tardy. Another circumstance doubtless much favoured this progress. *The Dutch, having imprudently* admitted the French into their territory, were soon absorbed into the destructive vortex of that revolutionary power. Involved in her long war with the mistress of the seas, and subjected to the anti-commercial policy of Napoleon, Holland saw all her fisheries, with every other branch of her foreign commerce, completely annihilated, and British vessels enjoying the undisturbed possession of the northern seas. Peace, indeed, at length re-opened to that nation all these channels of industry; but during a suspension of twenty years their habits were broken, their connexions dissolved, their most skilful and intrepid whale-fishers had died out; while Britain, which had been in a state of constant activity and improvement, was now every way an overmatch for her formerly successful rival.

Before proceeding to describe the operations of the whale-fishery, it may be proper to mention some attempts which, with a view to its more effectual prosecution, were made to establish colonies on the dreary shores of the Polar sea.

In 1633 the Dutch planned a settlement on the northern coast of Spitzbergen, when seven sailors volunteered for this arduous undertaking. On the 30th August the fleet left them in North Bay, where they not only undertook to live during the winter, but even to provide themselves with fresh provisions. They visited all the surrounding shores, took three rein-deer and a number of sea-swallows, collecting also a great quantity of a species of water-cress. Their great ambition was to catch a whale; but, though tantalized by the sight of many, all their attempts failed. Even one found dead and fresh on the margin of the sea was floated out by the tide before they could secure it.

It was on the 3d October that the extreme cold began to be felt, ccompanied by numerous flights of birds passing to the southward. On the 13th one of the casks of beer was frozen three inches thick. The winterers were obliged to break the ice in pieces, and thaw it before the fire, when it made a very unpalatable liquor. On the 15th, having ascended one of the neighbouring mountains, they could see only a small portion of the sun's disk on the verge of the horizon, and in a few days it entirely disappeared; there was still a faint twilight of eight hours, which was soon reduced to five, and became every day shorter and shorter. In November the cold increased to the utmost pitch: they could not sleep in their beds, but were obliged either to crouch over the fire, or run full speed through the hut, to keep up the vital energy. At length they ranged all their couches round the fire-place and a stove, yet still found it necessary to lay themselves down between the stove and the fire, holding their feet to the very embers. On the 20th December they saw a very bright illumination, resembling the Aurora Borealis, over the southern part of the sky. They could not, however, believe it to be the real Aurora, which they afterwards saw of peculiar splendour in its proper place. Night and winter continued in their utmost intensity till the 22d January, when they again enjoyed a twilight of six hours; at mid-day of the 26th there was no longer a star to be seen; but it was the 22d February ere, from a mountain-top, they could descry any portion of the sun's disk. Throughout the whole period they had dreadful contests to maintain with the Polar bear. On the 3d March one of these animals had received two balls in the throat, which he was endeavouring to pluck out with his paws, when the whole seven sailors rushed on him with their lances. The bear dashed at one of them, tore the lance from his hand, and threw him on the ground; but as the animal was about to devour his victim, another sailor struck and obliged him to quit his hold; afterwards, however, though pursued by all the seven, he plunged into the sea and escaped.

Thus these seven persons passed through this hard winter without any severe attack of scurvy; and on the 27th May they were overjoyed by the view of a boat, which conveyed them to a neighbouring bay, where seven Dutch ships had assembled for the fishery. The active life led by these seamen was apparently the chief cause by which their health was so well preserved.

The success of this experiment induced the Dutch Company to repeat the attempt in the following year, when seven other sailors, well furnished with victuals, and apparently with every means of withstanding the rigour of the climate, undertook to winter in Spitzbergen. They appear, however, to have been of a less active disposition than their predecessors, and failed in every attempt to procure fresh victuals. The sun having quitted them on the 20th October, they shut themselves up in their hut, out of which they scarcely ever stirred. In a few weeks they were attacked by scurvy under its most malignant form, which, amid this recluse life, and in the absence of fresh meat and vegetables, assumed continually a more alarming type, till three died, whose bodies the others with difficulty enclosed in coffins. The survivors killed a dog and a fox, which afforded some relief, but not enough to arrest the progress of the malady. The bears began to approach the hut, and would have been a blessing, had the men retained strength either to shoot the animals or to drag home the carcass. Their mouths became ulcerated; they were unable to chew their biscuit; and only Jerome Carloen had power to rise from bed and kindle a fire. The sun appeared on the 24th February; but they could no longer derive aid from this benignant luminary. The last entry in their journal is in the following terms:—"We are all four stretched on our beds, and are still alive, and would eat willingly, if any one of us were able to rise and light a fire. We implore the Almighty, with folded hands, to deliver us from this life, which it is impossible to prolong without food or any thing to warm our frozen limbs. None of us can help the other, each must support his own misery."—Early in spring the fishing vessels arrived, and a party hastened to the hut. They found it so fast closed, that an entrance could only be effected by opening the roof. They found it a tomb. Three of the men were enclosed in the coffins which had been framed for them; the other four lay dead, two in their beds, and two on a piece of sail spread on the floor. These last had perished in consequence of mere inability to make the effort necessary for lifting and dressing the food; and they had suffered convulsions so dreadful, that their knees and chin had come into contact, and their bodies resembeld a rounded block.

The Dutch about the same time made an attempt to establish a colony on the island of Jan Mayen, but with a result equally fatal. The journal of the unfortunate seamen contains little except a very exact register of the weather.

No farther attempts were made at that time to colonize Spitzbergen. The next instance of wintering on those dreary shores arose from necessity and disaster. A Russian vessel, which had sailed from Archangel for the whale-fishery in 1743, being driven by the wind to the eastern coast of Spitzbergen, found itself beset amid floating ice without hope of deliverance. One of the party recollected that a hut had been erected on this coast by some of his countrymen, under the apprehension of being obliged to spend the winter there. He and three others set out to discover the place. With much difficulty they reached the shore, leaping from fragment to fragment of moving ice; then, spreading themselves in different directions, they found the cottage which, though ruinous, afforded shelter for the night. Early in the morning they hastened to the shore, to convey to their comrades this happy intelligence. But what must have been their horror, when they saw only a vast open sea, without a vestige of the ship, or even of the numerous icebergs which had been tossing through the waves! A violent gale had dispersed them all, and apparently also sunk the vessel, which was never heard of more.

These four unfortunate seamen, abandoned on this dreadful shore, having the long winter to pass without food, or arms and implements to procure any, did not, however, give way to despair. They had a gun with which they shot twelve deer; then their ammunition failed; but some pieces of iron were found on the shore, which they contrived to fashion into pikes. At the moment when their stock of venison was nearly exhausted, they found occasion to employ these weapons against a Polar bear by which they were assailed. The animal, being vanquished and killed after a formidable struggle, supplied for the present all their wants. His flesh was food, his skin clothing, his entrails, duly prepared, furnished the string, which alone had been wanting to complete a bow. With that instrument they were more than a match for the rein-deer and the Arctic fox, with the spoils of which they filled both their pantry and their wardrobe; and thenceforth they avoided, unless in cases of necessity, the encounter of the bear. Being destitute of cooking utensils, they were obliged to devour the food nearly raw—dried either by suspension in the smoke during the long winter, or by exposure to the heat of the sun during the short summer.* Yet this regular supply of fresh meat, and, above all, the constant exercise to which necessity prompted, enabled them to preserve their health entire during six years, in which they looked in vain for deliverance. In this time they killed 10 bears, 250 rein-deer, and a multitude of foxes. At the end of the six years one of them died, when the three survivors sunk into despondence, giving up all hopes of relief, and looking forward to the moment when the last of them would become the prey of the bears. Suddenly, on the 15th August, 1749, they descried a vessel at sea. They lighted fires on the heights, hoisted a flag formed of rein-deer skins, and were at length discovered by the ship, which proved to belong to their native country. They loaded her with such a quantity of skins and lard as enabled them to pay eighty rubles for their passage, and afterwards to make a profitable voyage.

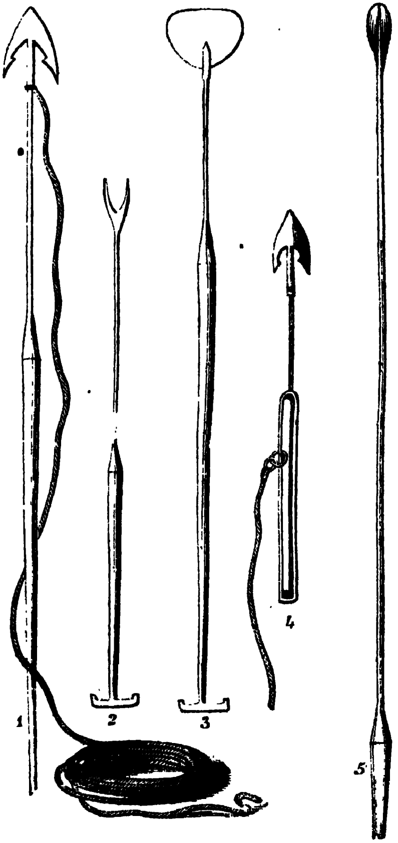
The example thus involuntarily set by these Russian sailors has been followed to a considerable extent by their countrymen, some of whom have since regularly wintered in huts on the Spitzbergen coast, and employed themselves in chasing the walrus and seal along the shore, the deer and Arctic fox in the interior. They are constantly engaged in hunting, unless when interrupted by tempest; and, even when the hut is blocked up with snow, they find their way out by the chimney. They have a reserve of salt provisions; but as much as possible subsist on the flesh and drink the warm blood of the rein-deer, digging under the snow for cochlearia, sorrel, and other plants that act as antidotes to scurvy. By this regimen they generally preserve their health completely uninjured, though the British seamen employed in whale-fishing have occasionally found the dead body of a Russian who had fallen a victim to this dreadful malady.

It is now time to give a general view of the mode of catching whales practised by the two great fish ing nations of the present day, the British and the Dutch.

The first object is to fit out a ship suited to the trade. While the fishery was carried on in bays, or on the exterior margin of icy fields, very slight fabrics were sufficient; but now that the vessels depart early in the season, and push into the very heart of the northern ices, they are liable every moment to the most severe shocks and concussions. The ship, therefore, must be constructed in such a manner as to possess a peculiar degree of strength. Its exposed parts are secured with double or even treble timbers; while it is *fortified*, as the expression is, externally with iron plates, and internally with stanchions and cross-bars, so disposed as to cause the pressure on any one part to bear upon and be supported by the whole fabric. Mr Scoresby recommends the dimension of 350 tons as the most eligible. A ship of this size is sometimes filled; and the number of men required for its navigation, being also necessary for manning the boats employed in the fishery, could not be reduced even in a much smaller vessel. A larger tonnage than 350, being scarcely ever filled, involves the proprietor in useless extra expense. The Dutch are of opinion, that the vessels destined for this fishery should be 112 feet long, 29 broad, and 12 deep, carrying seven boats, and from forty to fifty seamen. One of the most essential particulars is the crow's nest, a species of sentry-box made of canvass or light wood, pitched on the main-top-mast, or top-gallant-mast head. This is the post of honour, and also of severe cold, where the master often sits for hours in a temperature thirty or forty degrees below the freezing-point, and whence he can descry all the movements of the surrounding seas and ice, and give directions accordingly. He is provided with a telescope, a speaking-trumpet, and a rifle, with which he can sometimes strike a narwal, as it floats around the ship.

The whaling vessels usually take their departure in such time as to leave the Shetland Isles about the beginning of April; and before the end of the month arrive within the Polar seas. It was long customary to spend a few weeks at what is called the Seal-fishers' Bight, extending along the coast of Greenland, ere they pushed into those more northern waters, where, amid fields and mountains of ice, the powerful and precious *mysticetus* is tossing; but in later times it has become usual to sail at once into that centre of danger and enterprise.

As soon as they have arrived in those seas which are the haunt of the whale, the crew must be every moment on the alert, keeping watch day and night. The seven boats are kept hanging by the sides of the ship, ready to be launched in a few minutes; and, where the state of the sea admits, one of them is usually manned and afloat. These boats are from 25 to 28 feet long, about 5½ feet broad, and constructed with a special view to lightness, buoyancy, and easy steerage. The captain or some principal officer, seated in the crow's nest, surveys the waters to a great distance, and the instant he sees the back of the huge animal, which they seek to attack, emerging from the waves, gives notice to the watch who are stationed on deck; part of whom leap into a boat, which is instantly lowered down, and followed by a second if the fish be a large one. Each of the boats has a harpooner,



1. Hand Harpoon. 2. Pricker. 3. Blubber Spade.
4. Gun Harpoon. 5. Lance.

and one or two subordinate officers, and is provided with an immense quantity of rope coiled together and stowed in different quarters of it, the several parts being spliced together, so as to form a continued line, usually exceeding four thousand feet in length. To the end is attached the *harpoon*, (fig. 1,) an instrument formed, not to pierce and kill the animal, but, by entering and remaining fixed in the body, to prevent its escape. One of the boats is now rowed towards the whale in the deepest silence, cautiously avoiding to give an alarm, of which he is very susceptible. Sometimes a circuitous route is adopted in order to attack him from behind. Having approached as near as is consistent with safety, the harpooner darts his instrument into the back of the monster.* This is a critical moment; for when this mighty animal feels himself struck, he often throws himself into violent convulsive movements, vibrating in the air his tremendous tail, one lash of which is sufficient to dash a boat in pieces. More commonly, however, he plunges with rapid flight into the depths of the sea, or beneath the thickest fields and mountains of ice. While he is thus moving at the rate usually of eight or ten miles an hour, the utmost diligence must be used that the line to which the harpoon is attached may run off smoothly and readily along with him. Should it be entangled for a moment, the strength of the whale is such, that he would draw the boat and crew after him under the waves. The first boat ought to be quickly followed up by a second, to supply more line when the first is run out, which often takes place in eight or ten minutes. When the crew of a boat see the line in danger of being all run off, they hold up one, two, or three oars, to intimate their pressing need of a supply. At the same time they turn the rope once or twice round a kind of post called the bollard, by which the motion of the line and the career of the animal are somewhat retarded. This, however, is a delicate operation, which brings the side of the boat down to the very edge of the water, and if the rope is drawn at all too tight, may sink it altogether. While the line is whirling round the bollard, the friction is so violent, that the harpooner is enveloped in smoke, and water must be constantly poured on to prevent it from catching fire. When, after all, no aid arrives, and the crew find that the line must run out, they have only one resource,—they cut it, losing thereby not only the whale, but the harpoon and all the ropes of the boat.

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* The harpoon is sometimes discharged from a peculiar species of gun, in which case the form, fig. 4, is employed; but this mode has not come into very general use.

When the whale is first struck and plunges into the waves, the boat's crew elevate a flag as a signal to the watch on deck, who give the alarm to those asleep below, by stamping violently on the deck, and crying aloud—"*A fall! a fall!*" (Dutch, *val*, expressing the precipitate haste with which the sailors throw themselves into the boats.) On this notice they do not allow themselves time to dress, but rush out in their sleeping-shirts or drawers into an atmosphere, the temperature of which is often below zero, carrying along with them their clothing in a bundle, and trusting to make their toilette in the interval of manning and pushing off the boats. Such is the tumult at this moment, that young mariners have been known to raise cries of fear, thinking the ship was going down.

The period during which a wounded whale remains under water is various, but is averaged by Mr Scoresby at about half an hour. Then, pressed by the necessity of respiration, he appears above, often considerably distant from the spot where he was harpooned, and in a state of great exhaustion, which the same ingenious writer ascribes to the severe pressure that he has endured when placed beneath a column of water 700 or 800 fathoms deep. All the boats have meantime been spreading themselves in various directions, that one at least may be within a *start*, as it is called, or about 200 yards of the point of his rising, at which distance they can easily reach and pierce him with one or two more harpoons before he again descends, as he usually does for a few minutes. On his re-appearance a general attack is made with lances, (fig. 5,) which are struck as deep as possible, to reach and penetrate the vital parts. Blood mixed with oil streams copiously from his wounds and from the blow-holes, dyeing the sea to a great distance, and sprinkling and sometimes drenching the boats and crews. The animal now becomes more and more exhausted; but, at the approach of his dissolution, he often makes a convulsive and energetic struggle, rearing his tail high in the air, and whirling it with a noise which is heard at the distance of several miles. At length, quite overpowered and exhausted, he lays himself on his side or back, and expires. The flag is then taken down, and three loud huzzas raised from the surrounding boats. No time is lost in piercing the tail with two holes, through which ropes are passed, which, being fastened to the boats, drag the fish to the vessel amid shouts of joy.

The whale being thus caught and secured to the sides of the ship, the next operation is that of *flensing*, or extracting the blubber and whalebone. This, if the full strength of the ship be put upon it, may be executed in about four hours, though a much longer time is often employed. The captain goes round and gives a dram to each seaman, with double allowance to important personages called the kings of the blubber, (Dutch *speck-koning*,) whose office it is to receive that precious commodity, and stow it in the hold. Another high functionary, called the *specksioneer*, has the direction of all the cutting operations. The first step is to form round the fish, between the neck and the fins, a circle called the *kent*, around which all proceedings are to be conducted. To it is fastened a machinery of blocks, called the kent-purchase, by which, with the aid of a windlass, the body of the whale can be turned on all sides. The harpooners then, under the specksioneer's direction, begin with a kind of spade, (fig. 3,) and with huge knives, to make long parallel cuts from end to end, which are divided by cross-cuts into pieces of about half a ton. These are conveyed on deck, and, being reduced into smaller portions, are received by two kings, who stow them in the hold. Finally, being by other processes still farther divided, it is received into casks, and the packing completed by the instrument No 2. As soon as the cutting officers have cleared the whole surface lying above water, which does not exceed a fourth or a fifth of the animal, the kent machinery is applied, and turns the carcass round, till another part, yet untouched, is presented. This being also cleared, the mass is again turned, and so on, till the whole has been exposed, and the blubber removed. The kent itself is then stripped, and the bones of the head being conveyed on board, there remains only the *kreng*, a huge heap of fleshy and muscular substance, which is abandoned, either to sink, or be devoured by the flocks of ravenous birds and sharks which duly attend on this high occasion. The blubber, now deposited in the hold, is by various processes cleared of its impurities, cut into small pieces, and deposited in casks. While the Dutch establishment of Smeerenberg flourished, they extracted the oil in immense boilers, constructed there for this purpose; but when the fishery was transferred to the icy banks in the open sea, this operation was necessarily deferred till the cargoes were deposited in the Dutch or British ports.

The success of the fishery varies with the spot in which whales are found. The most advantageous that the Greenland seas afford has been considered to be on the border of those immense fields of ice, with which a great extent of them is covered. In the open sea, when a whale is struck, and plunges beneath the waters, he may rise in any part of a wide circuit, and at any distance from the boats, so that, before a second harpoon can be struck, he may plunge again, and by continued struggles effect his extrication. But in descending beneath these immense fields, he is hemmed in by the icy floor above, and can only find an atmosphere to breathe by returning to their outer boundary. The space in which he can rise is thus contracted from a large circle to a semicircle, or even smaller segment

Hence a whale in this position is attacked with much better chance of success; even two may be pursued at the same moment,—a measure which, in the open sea, often involves the loss of both. In the flourishing state of the Dutch fishery, a hundred of their vessels have been seen at once ranged on the margin of one of those immense fields, along which the boats formed so continuous a line that no whale could rise without being immediately struck. This situation, at the same time, is attended with considerable danger from the disruptions and concussions to which these plains are liable.

When the ship is surrounded with floating fragments of ice, the fishery, though difficult, is usually productive. But the case is very different when these pieces are packed together into a mass impervious to ships or boats, yet leaving numerous holes or openings, through which the whale can mount and respire, without coming to the open margin, or within reach of his assailants. The fishers, when they see the whale blowing through one of these apertures, must alight on the ice, and run full speed to the spot with lance and harpoon. Attack in such circumstances, however, is both difficult and perilous; and even when the whale is killed, the dragging of his body either under or over the ice to the ship is a most tedious and laborious task, which sometimes cannot be effected without cutting the carcass in pieces.

When the great fields, in the progress of the season, become open at various points, the fishery becomes liable to the same evils as occur among packed ice. Still worse is the case when the sea is overspread with that thin newly-formed crust called bay-ice. The whale easily finds or beats a hole through this covering, while neither can the boats penetrate, nor the men walk over it, without the most imminent danger. Yet Mr Scoresby mentions a plan by which he continued to carry on his movements, even over a very slender surface of bay-ice. He tied together his whole crew, and made them thus walk in a long line one behind another. There never fell in above four or five at a time, who were easily helped out by the rest. The sufferers had a dram to console them after their cold plunge; and the compensation was considered so ample, that Jack was suspected of sometimes allowing himself to drop in with the view of being thus indemnified.

Another grand distinction respects, first, the Greenland fishery, which, generally speaking, is that already described, and is chiefly distinguished by the immense fields of ice which cover the ocean; and, secondly, the Davis's Strait fishery, where that element appears chiefly in the form of moving mountains, tossing through the deep. This last is arduous and dangerous, but usually productive. It commenced at a comparatively late period, since it is not mentioned by the Dutch writers prior to 1719; and Mr Scoresby has been unable to ascertain the date when it was begun by the British. Within these few years it has experienced a remarkable extension, of which a full account will be given in the course of this chapter.

The dangers of the whale-fishery, in spite of the utmost care, and under the direction even of the most experienced mariners, are imminent and manifold.

The most obvious peril is that of the ship being beset and sometimes dashed to pieces by the approach and collision of those mighty fields and mountains of ice with which those seas are continually filled. The Dutch writers mention many of these shipwrecks, among which the following are the most remarkable.

Didier Albert Raven, in 1639, when on the border of the Spitzbergen ice, was assailed by a furious tempest. Though the ship was violently agitated, he succeeded in steering her clear of the great bank, and thought himself in comparative safety, when there appeared before him two immense bergs, upon which the wind was violently driving his vessel. He endeavoured, by spreading all his sails, to penetrate between them; but in this attempt the ship was borne against one with so terrible a shock, that it was soon felt to be sinking. By cutting the masts the mariners enabled her to proceed; yet, as she continued to take in water, several boats were launched, which, being over-crowded, sunk, and all on board perished. Those left in the ship found their condition more and more desperate. The fore part of the vessel being deep in the water, and the keel rising almost perpendicular, made it extremely difficult to avoid falling into the sea; while a mast, to which a number had clung, broke, plunged down, and involved them in the fate of their unfortunate companions. At length the stern separated from the rest of the vessel, carrying with it several more of the sailors. The survivors still clung to the wretched fragments, but one after another was washed off by the fury of the waves, while some, half dead with cold, and unable to retain their grasp of the ropes and anchors, dropped in. The crew of eighty-six was thus reduced to twenty-nine, when the ship suddenly changed its position, and assumed one in which they could more easily keep their footing on board. The sea then calmed, and during the respite thus afforded they felt an irresistible propensity to sleep; but to some it was the fatal sleep of extreme cold, from which they never awoke. One man suggested the construction of a raft, which was accordingly framed, contrary to the captain's advice; happily, no sooner was it launched than the waves swallowed it up. The remnant of the vessel encountered next night another severe gale; and the sufferings of the crew, from cold, hunger, and burning thirst, were so extreme, that death in every form seemed now to have encompassed them. In the morning, however, a sail was descried, their signals were understood, and being taken on board, twenty survivors, after forty-eight hours of this extreme distress, were restored to safety.

In 1670 the Blecker (Bleacher,) Captain Pit, was driven against the ice with such violence, that in an instant all her rigging was dashed in pieces. Soon after twenty-nine of the crew quitted the vessel, and, leaping by the help of poles and perches from one fragment of ice to another, contrived to reach the main field. The captain with seven men remained on board, and endeavoured to open a passage; but soon after the ship again struck, when they were obliged to go into a boat, and commit themselves to chance, the snow falling so thick that they could scarcely see each other. As the weather cleared, they discovered their companions on the ice, who threw a whale-line, and dragged them to the same spot. There, the party having waited twelve hours in hopes of relief, at length trusted themselves to the boats, and in twelve hours were taken up by a Dutch vessel.[*]

Captain Bille, in 1675, lost a ship richly laden, which went down suddenly; after which the crew wandered in boats over the sea for fourteen days before they were taken up. Thirteen other vessels perished that year in the Spitzbergen seas. Three seasons afterwards Captain Bille lost a second ship by the violent concussion of the ice, the crew having just time to save themselves on a frozen field. At the moment of their disaster they were moored to a large floe, along with another, a brig called the Red Fox; which last shortly afterwards underwent a similar fate, being struck with such violence, that the whole, hull and masts together, disappeared almost in an instant,—the sailors, like Captain Bille's company, having had merely time to leap on the ice. The united crews now adopted various plans; some keeping their station, others setting out in boats in different directions; but all, in one way or other, reached home. The same year the Concord[*] went down in an equally sudden manner; but the crew were happily taken up by a neighbouring ship.

The whale-fishery is not more distinguished for examples of sudden peril and besetment than for unexpected deliverance from the most alarming situations.

Three Dutch ships, in 1676, after having completed a rich cargo on the northern coast of Spitzbergen, were at once so completely beset, that the crews in general urged the necessity of proceeding over the ice, and endeavouring to reach some other vessel. Ouvekees, however, captain of one of the three, strongly urged the obligation of doing all in their power to preserve such valuable property, and they agreed to make a farther trial; when, in twenty days, the ice opened, and they had a happy voyage homeward.

The Dame Maria Elizabeth, in 1769, had set out early for the fishery, and was so fortunate as, by the 30th of May, to have taken fourteen whales. Then, however, a violent gale from the south blew in the ice with such violence, that the captain found himself completely beset, and saw two Dutch vessels and one English go to pieces at a little distance. At length a brisk gale from the north gave him the hope of being extricated; when presently he was involved in a dense fog, which froze so thick upon the sails and rigging, that the ship appeared a mere floating iceberg. As the atmosphere cleared, the faint light, and the birds winging their way to the southward, announced the closing in of winter. Unable to make any progress, the seamen looked forward in despair to the prospect of spending the season in that frozen latitude. They had nearly come to the end of their provisions, and famine was already staring them in the face, when they thought of broiling the whales' tails, which proved very eatable, and even salutary against the scurvy. Thus they hoped to exist till the middle of February, beyond which the prospect was very dismal; but on the 12th November there arose a violent north wind, which dispersed the ice. Their hopes being now awakened, every effort was strained; and on the 18th a north-wester brought on so heavy a rain, that next day they were entirely clear of the ice, and had a prosperous voyage homeward.

The year 1777 was one which exhibited, on the greatest scale, all the vicissitudes of this occupation. Captain Broerties, in the Guillamine, arrived that year on the 22d June at the great bank of northern ice, where he found fifty vessels moored and busied in the fishery. He began it prosperously: the very next day indeed he killed a large whale. The day after, a tempest drove in the ice with such violence that twenty-seven of the ships were beset, of which ten were lost. Broerties, on the 25th July, seeing some appearance of an opening, caused the Guillamine to be warped through by the boats; but, after four days' labour, she found herself, with four other ships, in a narrow basin, enclosed by icy barriers on every side. The captain, foreseeing the danger of permanent besetment, obliged the crew to submit to a diminution of their rations.

On the 1st August the ice began to gather thick, and a violent storm driving it against the vessels, placed them in the greatest peril for a number of days. On the 20th a dreadful gale arose from the north-east, in which the Guillamine suffered very considerable damage. In this awful tempest, out of the five ships two went down, while a third had sprung a number of leaks. The crews were taken on board of the two remaining barks, which they greatly incommoded. On the 25th all the three were completely frozen in, when it was resolved to send a party of twelve men to seek aid from four vessels which a few days before had been driven into a station at a little distance; but by the time of their arrival two of these had been dashed to pieces, and the other two were in the most deplorable condition. Two Hamburgh ships, somewhat farther removed, had perished in a similar manner. Meantime the former came in sight of Gale Hamkes' Land, in Greenland, and the tempest still pushing them gradually to the southward, Iceland at length appeared on their left. The two more distant ones, commanded by Dirk Broer and Roel of Meyer, found a little opening, through which they contrived to escape. The crews of the three others were beginning to hope that they might at last be equally fortunate, when, on the 13th September, a whole mountain of ice fell upon the Guillamine. The men, half naked, leaped out upon the frozen surface, saving with difficulty a small portion of their provisions. The broken remnants of the vessel were soon buried under enormous piles of ice. Of the two other ships, one commanded by Jeldert Janz had just met a similar fate, and there remained only that of Jans Castricum, to which all now looked for refuge. By leaping from one fragment of ice to another, the men, not without danger, contrived to reach this vessel, which, though in extreme distress, received them on board. Shattered and overcrowded, she was obliged immediately after to accommodate fifty other seamen, the crew of the Jans Christiaanz of Hamburgh, which had just gone down, the chief harpooner and twelve of the mariners having perished. These numerous companies, squeezed into the crazy bark of Castricum, suffered every kind of distress. Famine, in its most direful forms, began to stare them in the face. All remoter fears, however, gave way, when, on the 11th October, the vessel went to pieces in the same sudden manner as the others, leaving to the unfortunate sailors scarcely time enough to leap upon the ice with their remaining stores. With great difficulty they reached a field of some extent, and contrived with their torn sails to rear a sort of covering; but, sensible that, by remaining on this desolate spot, they must certainly perish, they saw no safety except in scrambling over the frozen surface to the coast of Greenland, which was in view. With infinite toil they effected their object, and happily met some inhabitants, who received them hospitably, and regaled them with dried fish and seals' flesh. Thence they pushed across that dreary region, treated sometimes well, sometimes churlishly; but by one means or other they succeeded at length, on the 13th March, in reaching the Danish settlement of Frederikshaab. Here they were received with the utmost kindness; and, being recruited from their fatigues, took the first opportunity of embarking for Denmark, whence they afterwards sailed to their native country.

The Davis's Strait fishery has also been marked with very frequent and fatal shipwrecks. In 1814, the Royalist, Captain Edmonds, perished with all her crew; and in 1817, the London, Captain Mathews, shared the same fate. The only account of either of these ships ever received was from Captain Bennet of the Venerable, who, on the 15th April, saw the London in a tremendous storm, lying to windward of an extensive chain of icebergs, among which it is probable she was dashed to pieces that very evening. Large contributions were raised at Hull for the widows and families of the seamen who had suffered on these melancholy occasions.

Among accidents on a smaller scale, one of the most frequent is, that of boats employed in pursuit of the whale being overtaken by deep fogs or storms of snow, which separate them from the ship, and never allow them to regain it. A fatal instance of this kind occurred to the Ipswich, Captain Gordon; four of whose boats, after a whale had been caught, and even brought to the ship's-side, were employed on a piece of ice hauling in the line, when a storm suddenly arose, caused the vessel to drift away, and prevented her, notwithstanding the utmost efforts, from ever coming within reach of the unfortunate crews who composed the greater part of her establishment. Mr Scoresby mentions several casualties of the same nature which occurred to his boats' companies, all of whom, however, in the end happily found their way back. One of the most alarming cases was that of fourteen men who were left on a small piece of floating ice, with a boat wholly unable to withstand the surrounding tempest; but amid their utmost despair they fell in with the Lively of Whitby, and were most cordially received on board.

The source, however, of the most constant alarm to the whale-fisher is connected with the movements of that powerful animal, against which, with most unequal strength, he ventures to contend. Generally, indeed, the whale, notwithstanding his immense strength, is gentle, and even passive; seeking, even when he is most hotly pursued, to escape from his assailants, by plunging into the lowest depths of the ocean. Sometimes, however, he exerts his utmost force in violent and convulsive struggles; and every thing with which, when thus enraged, he comes into collision, is dissipated or destroyed in an instant. The Dutch writers mention Jacquez Vienkes of the Gort Moolen (Barley Mill,) who, after a whale had been struck, was hastening with a second boat to the support of the first. The fish, however, rose, and with its head struck the boat so furiously, that it was shivered in pieces, and Vienkes was thrown with its fragments on the back of the huge animal. Even then this bold mariner darted a second harpoon into the body of his victim; but unfortunately he got entangled in the line and could not extricate himself, while the other party were unable to approach near enough to save him. At last, however, the harpoon was disengaged, and he swam to the boat.

Mr Scoresby, in one of his earliest voyages, saw a boat thrown several yards into the air, from which it fell on its side, plunging the crew into the sea. They were happily taken up, when only one was found to have received a severe contusion. Captain Lyons of the Raith of Leith, on the Labrador coast, in 1802, had a boat thrown fifteen feet into the air: it came down into the water with its keel upwards, yet all the men except one were saved.

The crew of Mr Scoresby the elder, in 1807 had struck a whale, which soon reappeared, but in a state of such violent agitation that no one durst approach it. The captain courageously undertook to encounter it in a boat by himself; and succeeded in striking a second harpoon; but another boat having advanced too close, the animal brandished its tail with so much fury, that the harpooner, who was directly under, judged it most prudent to leap into the sea. The tail then struck the very place that he had left, and cut the boat entirely asunder, with the exception of two planks, which were saved by having a coil of ropes laid over them; so that, had he remained, he must have been dashed to pieces.

Happily all the others escaped injury. The issues, however, were not always so fortunate. The Aimwell of Whitby in 1810 lost three men out of seven, and, in 1812, the Henrietta of the same port lost four out of six, by the boats being upset, and the crews thrown into the sea.

In 1809, one of the men belonging to the Resolution of Whitby struck a sucking whale; after which the mother, being seen wheeling rapidly round the spot, was eagerly watched. Mr Scoresby, being on this occasion in the capacity of harpooner in another boat, was selecting a situation for the probable reappearance of the parent fish, when suddenly an invisible blow stove in fifteen feet of the bottom of his barge, which filled with water and instantly sunk. The crew were saved.

Entanglement in the line, while the retreating whale is drawing it off with rapidity, is often productive of great disaster. A sailor belonging to the John of Greenock, in 1818, having happened to step into the centre of a coil of running rope, had a foot entirely carried off, and was obliged to have the lower part of the leg amputated. A harpooner, belonging to the Henrietta of Whitby, had incautiously cast some part of the line under his feet; when a sudden dart of the fish made it twist round his body. He had just time to cry out,—" Clear away the line! O dear!" when he was cut almost asunder, dragged overboard, and never more seen.

A whale sometimes causes danger by proving to be alive after having exhibited every symptom of death. Mr Scoresby mentions the instance of one which appeared so decidedly dead, that he himself had leaped on the tail, and was busy putting a rope through it, when he suddenly felt the animal sinking from beneath him. He made a spring towards a boat that was some yards distant, and, grasping the gunwale, was assisted on board. The fish then moved forward, reared his tail aloft, and shook it with such prodigious violence, that it resounded to the distance of several miles. After two or three minutes of this violent exertion, he rolled on his side and expired.

Even after life is extinct, all danger is not over. In the operation of flensing, the harpooners sometimes fall into the whale's mouth, with the imminent danger of being drowned. In the case of a heavy swell they are drenched, and sometimes washed over by the surge. Occasionally they have their ropes broken, and are wounded by each other's knives. Mr Scoresby mentions a harpooner who, after the flensing was completed, happened to have his foot attached by a hook to the kreng or carcass, when the latter was inadvertently cut away. The man caught hold of the gunwale of the boat; but the whole immense mass was now suspended by his body, occasioning the most excruciating torture and even exposing him to the danger of being torn asunder, when his companions contrived to hook the kreng with a grapnel, and bring it back to the surface.

The whale, in attempting to escape, sometimes exerts prodigious strength, and inflicts upon its pursuers not only danger, but the loss of their property. In 1812, a boat's crew belonging to the Resolution of Whitby struck a whale on the margin of a floe. Supported by a second boat, they felt much at their ease, there being scarcely an instance in which the assistance of a third was required in such circumstances. Soon, however, a signal was made for more line, and as Mr Scoresby was pushing with his utmost speed, four oars were raised in signal of the utmost distress. The boat was now seen with its bow on a level with the water, while the harpooner, from the friction of the line, was enveloped in smoke. At length, when the relief was within a hundred yards, the crew were seen to throw their jackets upon the nearest ice, and then leap into the sea; after which the boat rose into the air, and, making a majestic curve, disappeared beneath the waters, with all the line attached to it. The crew were saved. A vigorous pursuit was immediately commenced; and the whale, being traced through narrow and intricate channels, was discovered considerably to the eastward, when three harpoons were darted at him. The line of two other boats was then run out, when, by an accidental entanglement, it broke, and enabled the whale to carry off in all about four miles of rope, which, with the boat, were valued at £150. The daring fishers again gave chase; the whale was seen, but missed. A third time it appeared, and was reached; two more harpoons were struck, and the animal being plied with lances, became entirely exhausted, and yielded to its fate. It had by that time drawn out 10,440 yards, or about six miles of line. Unluckily, through the disengagement of a harpoon, a boat and thirteen lines, nearly two miles in length, were detached and never recovered.

Whale-fishers sometimes meet with agreeable surprises. The crew of the ship Nautilus had captured a fish, which being disentangled and drawn to the ship, some of them were employed to haul in the line. Suddenly they felt it pulled away as if by another whale, and having made signals for more line, were soon satisfied, by the continued movements, that this was the case. At length a large one rose up close to them, and was quickly killed. It then proved, that the animal, while moving through the waters, had received the rope into its open mouth, and, struck by the unusual sensation, held it fast between its jaws, and thus became the prey of his enemy.—The Prince of Brazils of Hull had struck a small fish, which sunk apparently dead. The crew applied all their strength to heave it up; but sudden and violent jerks on the line convinced them that it was still alive. They persevered, and at length brought up two fishes in succession, one of which had many turns of the rope wound round its body. Having been entangled under water, it had, in its attempt to escape, been more and more implicated, till, in the end, it shared the fate of its companion.

A view of the whale-fishery, as it existed prior to 1820, has thus been drawn from ample and authentic materials afforded by the Dutch and other earlier writers, as well as by the valuable work of the younger Mr Scoresby. Having understood, however, that within the last few years the trade has been turned into several new channels, we applied to certain intelligent individuals in the principal ports, from whom we have obtained such valuable information as enables us to bring down the history of its operations to the very latest period.

A remarkable change has lately taken place as to the waters in which the fishery is carried on. For more than a century it was confined to the space between Spitzbergen and Greenland, commonly called the Greenland Sea. Early in the eighteenth century Davis's Strait began to be frequented, and the ships sent thither gradually increased in number. A somewhat more ample return, in fact, was drawn from those western seas, though Mr Scoresby conceives that the longer and more expensive voyage, and the increased hazards, fully counterbalanced this advantage. When he wrote, the Greenland fishery was still the most considerable, and the ships proceeding thither were in the proportion of three to two of those sent to Davis's Strait. Since that time its produce has sustained a remarkable diminution; the whales which, during the course of two centuries, had been gradually retiring from place to place, have at last sought refuge in the remote and inaccessible depths of the icy sea. Hence this fishery has been almost abandoned; having employed, in 1829, only one vessel, though in 1830 the number has been increased to four. For this almost entire loss of their original ground, the whalers have been compensated by the new and more extensive field opened up to them on the western coast. The important expeditions sent out by government under Ross and Parry have made them acquainted with a number of admirable stations on the farther side of Davis's Strait and in the higher latitudes of Baffin's Bay, which were before little known and scarcely ever frequented. They now, therefore, prosecute their fishery almost exclusively in those seas, and follow a method which is in many respects different.

The vessels destined for that quarter sail usually in March, though some delay their departure till the middle or even the end of April. They proceed first to the northern parts of the coast of Labrador, or to the mouth of Cumberland Strait, carrying on what is called the South-west Fishery. After remaining there till about the beginning of May, they cross to the eastern shore of the Strait, and fish upwards along the coast, particularly in South-east Bay North-east Bay, Hingston Bay or Horn Sound. About the month of July, they usually cross Baffin's Bay to Lancaster Sound, which they sometimes enter, and occasionally even ascend Barrow's Strait twenty or thirty miles. In returning, they fish down the western shore, where their favourite stations are Pond's Bay, Agnes's Monument, Home Bay, and Cape Searle. If the ships be not previously filled, they commonly remain till the end of September, and in some instances persevere till late in October. Our informant at Peterhead mentions a vessel from that port which was *clean* on the last day of September; yet the captain proceeded with such spirit and resolution, that after this date he caught five whales, making his cargo equal to the average of the year, and reached home by the 27th October.

The vessels for Greenland sail about the beginning of April, and return frequently in July, seldom remaining on the fishing-ground beyond the end of August.

The Davis's Strait fishery has always been subject to remarkable casualties, which have been still farther increased since the vessels took a wider range, and ventured into the higher and more frozen latitudes. Our correspondent at Aberdeen states, that,—

In 1819, out of 63 ships there were lost 10
... 1821, ... 79 11
... 1822, ... 60 7

These wrecks have generally occurred in consequence of the ships being beset in their attempt to pass from the eastern coast to Lancaster Sound, across that great barrier of ice which fills the centre of Baffin's Bay. The sides of the vessels have sometimes been pressed together; at other times they have been squeezed out of the water and laid upon the ice. But experience seems to have enabled the mariners to guard, in some degree, against these dangers. Last year, of eighty-nine ships sent out to this fishery only four were lost; namely, the Dauntless, Bramham, of Hull; the Rookwood, Lawson, of London; the Jane, Bruce, of Aberdeen; the Home Castle, Stewart, of Leith.

Several of these shipwrecks have been attended with very peculiar circumstances. In 1825, the Active, Captain Gray, of Peterhead, was so completely beset in Exeter Sound, that, on the 1st October, the crew were obliged to abandon her and take a passage in other ships. Next year a vessel, sent out to ascertain her fate, found her on the beach, at a little distance from the place of besetment, completely uninjured. She was got off in a few days, and brought home with her cargo to Peterhead, where she arrived on the 12th September.

In 1826, the Dundee, Captain Dawson, of London, having ventured into the higher parallels of Baffin's Bay, was, in 74° 30′ north latitude, so completely beset and enclosed within impenetrable barriers, that the crew could obtain no assistance from the other ships. To add to their distress, a Dutch vessel near them was completely wrecked; and the men, to the number of forty-six, came on board entirely destitute. They were supported from the 23d August to the 6th October, when they set out in their boats to endeavour to reach the Danish settlement of Levely; but as this was 350 miles distant, much doubt was entertained if they would ever arrive at their destination. The crew of the Dundee, reduced to extreme distress by the want of provisions, succeeded in killing some seals and bears, on whose coarse flesh they were thankful to sustain life. On the 1st February they caught a whale, and on the 16th a second, which afforded great relief, especially as other fishes were attracted by the desire to feed on the carcass of this huge animal. Unfortunately for their repose the sea was not so completely frozen but that enormous icebergs were still tossing through it with thundering noise, tearing up the fields by which the ship was surrounded. On the 22d February, one of uncommon magnitude was seen bearing directly upon their stern, its collision with which appeared inevitable; whereupon the seamen snatching their clothes, leaped out upon the ice, and ran to some distance. The iceberg rolled on with a tremendous crash, breaking the field into fragments, and hiding from their view the ship, which they expected never to see again; but happily it passed by, and the Dundee appeared from behind it uninjured; a spectacle that was hailed with three enthusiastic cheers. The mariners lost sight of the sun for seventy-five days, during which they suffered such severe cold, that they could not walk the deck for five minutes without being frost-bitten. Luckily they were able to pick up a quantity of spars and staves belonging to the Dutch wreck, which afforded a supply of fuel, otherwise they must have perished from the intensity of the frost. By great good fortune, too, the body of ice in which they were enclosed drifted to the southward more than eleven degrees, (from 74° 30′, down to 63°), or about 800 miles, and was thus brought nearly to the mouth of Davis's Strait. On the 1st April, when the Lee, Captain Lee, of Hull, had just commenced her fishing, the crew were agreeably surprised by meeting the Dundee, whose catastrophe had excited the greatest interest at home; they supplied her liberally with provisions, and every necessary for enabling her to reach Britain. The vessel was accordingly liberated on the 16th April, and on the 2d June arrived off Shetland, whence intelligence was immediately spread of this happy deliverance.

One of the most affecting shipwrecks which ever occurred in the northern seas was that of the Jean of Peterhead, in 1826. Of this we can give a full account from an interesting narrative by Mr Cumming, the surgeon, an eye-witness and sharer of the calamity. This vessel sailed on the 15th March, having on board only twenty-eight men, but received at Lerwick a complement of twenty-three natives of Shetland; owing to which arrangement, as well as by contrary winds, she was detained till the 28th. From the evening of that day to the 1st April, the ship encountered very stormy weather, which she successfully withstood, and was then steered into those western tracts of the Greenland sea which are the most favourable for the capture of the seal. On the 14th, in the latitude of 68°, the fishery began most prosperously. In one day the seamen killed 1138 seals, and the entire number caught in five days exceeded 3070. This scene, however, could not be contemplated without some painful impressions. The seals attacked were only the young, as they lay fearlessly reposing on the ice, before they had yet attempted to plunge into the watery element. One blow of the club stunned them completely. The view of hundreds of creatures bearing some resemblance to the human form, writhing in the agonies of death, and the deck streaming with their gore, was at once distressing and disgusting to a spectator of any feeling. However, this evil soon gave way to others of a more serious nature.

On the morning of the 18th April the sailors had begun their fishery as usual; but a breeze sprung up, and obliged them by eleven o'clock to suspend operations. The gale continually freshened, and was the more unpleasant from their being surrounded with loose ice, which a dense and heavy fog made it impossible to distinguish at any distance. The mariners took in all sail, but did not apprehend danger till six in the evening, when the wind, which had been continually increasing, began to blow with tenfold fury. All that the narrator had ever heard, of the united sounds of thunder, tempest, and waves, seemed faint when compared with the stunning roar of this hurricane. At eight the ship was borne upon a stream of ice, from which she received several severe concussions; the consequence of which was, that at ten the water began to enter, and at twelve no exertion in pumping could prevent her from being gradually filled.

At one in the morning she became completely waterlogged. She then fell over on her beam-ends, when the crew, giving themselves up for lost, clung to the nearest object for immediate safety. By judiciously cutting away the main and foremasts, they happily enabled the ship to right herself, when being drifted into a stream of ice, she was no longer in danger of immediate sinking. The whole hull, however, was inundated and indeed immersed in water, except a portion of the quarter-deck, upon which the whole crew were now assembled. Here they threw up an awning of sails tò shelter themselves from the cold, which had become so intense as to threaten the extinction of life. Those endowed with spirit and sense kept up the vital power by brisk movement; but the natives of Shetland, who are accused on such occasions of sinking into a selfish despondency, piled themselves together in a heap, with the view of deriving warmth from each other's bodies. Those in the interior of the mass obtained thus a considerable temperature, though accompanied with severe pressure; and blows were given, and even knives drawn, to gain and to preserve this advantageous position. On the 19th, one Shetlànder died of cold, another on the 20th, and a third on the 21st,—events felt by the others as peculiarly gloomy, chiefly, it is owned, as forming a presage of their own impending fate.

On the 22d the sun began to appear amid showers of snow; and the 23d was ushered in by fine weather and a clear sky. The opinions of the crew were now divided as to what course they should steer in search of deliverance. Two plans were suggested. They could either stretch northward into the fishing stations, where they might expect sooner or later to meet some of their countrymen, by whom they would be received on board; or they might sail southward towards Iceland, and throw themselves on the hospitality of its inhabitants. The former plan was in several respects the more promising, especially as a vessel had been in sight when the storm arose. But its uncertainties were also very great. They might traverse for weeks those vast icy seas, amid cold always increasing, and with imminent danger of being swallowed up by the waves. Iceland was distant, but it was a definite point; and upon this course they at last wisely determined. Several days were spent in fitting out their two remaining boats—all the others having been swept away—and in fishing up from the interior of the vessel every article which could be turned to account. During this operation, the weather continuing fine, they could not forbear admiring the scene by which they were surrounded. The sea was formed as it were into a beautiful little frith, by the ice rising around in the most varied and fantastic forms, sometimes even assuming the appearance of cities adorned with towers and forests of columns. Continual efforts were necessary, meantime, to keep the wreck on the icy field; for had it slipped over into the sea, of which there appeared a strong probability, it would have gone down at once. By the 26th the boats were completely ready, having on board a small stock of provisions, and a single change of linen. At half-past one in the morning of the 27th the mariners took leave, with some sorrow, of the vessel, which "seemed a home even in ruins," leaving the deck strewed with clothes, books, and provisions, to be swallowed up by the ocean as soon as the icy floor on which it rested should melt away.

The two boats, having received forty-seven men on board, lay very deep in the water; so that when a smart breeze arose, the men were obliged to throw away their spare clothing and every thing else which could be wanted, and soon saw their little wardrobe floating on the face of the sea. The leaky state of one of the barges entailed the necessity of hauling it on a piece of ice to be repaired. The seamen were frequently obliged also to drag them both over large fields, and again to launch them. However, a favourable wind in ten hours enabled them to make forty-one miles, when they came to the utmost verge of the icy stream, and entered upon the open ocean. Their fears were not yet removed; for if a heavy gale had arisen, their slender barks must soon have been overwhelmed. There blew in fact a stiff breeze, which threw in a good deal of water, and caused severe cold; however, at seven in the evening, they saw, with inexpressible pleasure, though dim and distant, the lofty and snow-capped mountains of Iceland. But these were still fifty miles off, and much might intervene; so that the night, which soon closed in, passed with a mixture of joy and fear. Fortunately the morning was favourable; and about four they saw a black speck on the surface of the ocean. It proved to be an island, naked, rocky, and seemingly uninhabited; yet to set foot on any shore, however wild and desolate, promised a temporary relief. On turning a promontory, what was their joy to see a boat pushing out to meet them! and they were received by the natives of Grimsey (the name of the little island) with every mark of kindness and compassion. The seamen were distributed among the half-subterraneous abodes, and received a portion of the frugal and scanty fare on which the inhabitants subsisted. They were long without any means of communication by speech; but at length the clergyman appeared, who was able to converse in Latin with Mr Cumming. The latter, inquiring how his countrymen could best reach the mainland, was informed, that the islanders would assist in conveying them to Akureyri, a small town, the residence of the nearest Danish governor, though situated at the distance of sixty-eight miles. Accordingly, at seven in the morning of the 2d May, they set sail, and, after a tedious voyage, reached at nine in the evening the coast of Iceland. They rowed along the shore, touching at various points, where they were hospitably received; till on Thursday, 4th May, they saw a cluster of irregular wooden structures, which, to their surprise, proved to be Akureyri, the capital of this quarter of the island. They were here also received with the most humane hospitality, and remained three months before they could obtain a passage home; during which delay unfortunately they lost nine of their number, chiefly from mortification and other morbid affections occasioned by extreme cold. In the middle of July they procured a passage in a Danish vessel, which brought them and their boats near to the coast of Shetland. Having landed at Lerwick, they were conveyed by his Majesty's ship Investigator to Peterhead, where they arrived on the 5th August.

The whale-fishery deserves finally to be considered in its commercial relations, under which aspect it possesses considerable importance, whether we consider the capital invested, or the amount and value of the proceeds.

The first and principal employment of capital in this trade consists in the construction and fitting out of the vessels adapted for its various purposes. This expense greatly exceeds that of other ships of the same dimensions, owing to the manner in which the timbers must be doubled and fortified, the necessity of having seven boats, a copious supply of line, numerous casks, and fishing-implements. Mr Scoresby states, that the Resolution of Whitby, of 291 tons, was built in 1803 with all these equipments, but without the outfit for a particular voyage, at £6321. In 1813 the Esk of Whitby, of 354 tons, cost £14,000; but this included the outlay for her first adventure, which, being supposed to amount to £1700, would make the expense of building and equipment only £12,300. The sum of £14,000 is stated to us from Hull, as the estimate for building and furnishing at that port a ship of 350 tons, in the year 1812. Since this last period a great reduction has taken place. Mr Cooper, in 1824, reported to the House of Commons, that the sum required was only £10,000. According to the information received in July, 1830, from the different ports, we find that such a ship may now be built and completely equipped for about £8000. A Dundee correspondent calculates that half of this sum is expended in carpenter work, and the other half in sails, rigging, casks, lines, and other fishing-apparatus.

Besides this original cost, a large annual expenditure is incurred in the prosecution of the fishery. There is first the outfit, being the provisions and other supplies put on board before the ship goes to sea. Mr Scoresby states the expense of fitting out the Resolution of Whitby in 1803, to have amounted to £1470—namely, provisions, coals, &c., £769; insurance, £413; advance-money to seamen, £288. The statements forwarded at the present date, (July, 1830,) from the several ports upon this subject vary in a remarkable degree. At Leith the estimate is from £700 to £1200; Aberdeen £1400; Peterhead from £1200 to £1500; while at Hull this outfit is reckoned at £2000, expressly stated as exclusive of seamen's wages. Probably there may have been some difference as to the articles included in these estimates. An English crew, besides, may expect to be more amply provisioned, while the voyage from Hull is undoubtedly somewhat longer. To this first outlay must be added the expenses incurred in prosecuting the fishery, and in preparing the cargo for sale. The pay of the master and harpooners is very judiciously made to depend almost entirely upon their success. They receive a certain sum for every whale struck, and afterwards for every tun of oil extracted. The seamen, also, though they must have their monthly wages, obtain additional allowances in the event of a prosperous voyage. At Peterhead, it is estimated, that if a ship comes home *clean*, the entire loss will exceed £2000; while from Hull we have received a calculation, that the total expense of a voyage, which produces 200 tuns of oil, will be £3500, exclusive of insurance.

From these data we may form some estimate of the entire capital invested in the trade. Although the number of ships annually sent out scarcely exceeds ninety, it is probable that there may be at least a hundred in a state fit for sailing. The annual expenditure on each may be averaged at £3000. The value of wharfs, warehouses, machinery for extracting the oil, &c. was stated by Mr Cooper to the House of Commons as amounting at Hull to £60,000 or £70,000; and as that port enjoys about a third of the trade, these establishments may probably amount altogether to £200,000. We thus obtain

100 ships at £8000,	£800,000
90 voyages at £3000	270,000
Warehouses, &c.	200,000
Capital invested,	£1,270,000

The produce of the fishery consists of oil and of whalebone; none of the other articles, in an estimate of this kind, being worthy of much consideration. The prices of these two commodities vary greatly, both at different periods and from one year to another.

Whale-oil, in 1742, is stated to have sold for £18 per tun; but in the following year it fell to £14. In 1801 it rose so high as £50, but in 1802 was only £31, and in 1807 had sunk so low as £21. In 1813 it reached a higher price than ever, the finest quality being sold for £60; but the prosperous fishery of 1814 brought it down to £32. There has been since, on the whole, a considerable reduction of price, chiefly, it may be presumed, from the extensive use of coal-gas. Mr Scoresby reckons the average of the nineteen years, ending with 1818, at £34, 15s.; while an intelligent correspondent at

Aberdeen states that of the last ten at £22, 5s. The current price (July, 1830,) is given in the Scotch ports at from £24 to £26; in Hull at £24.

Whalebone bore anciently a very high price, when the rigid stays and the expanded hoops of our grandmothers produced an extensive demand for this commodity. The Dutch have occasionally obtained £700 per ton, and were accustomed to draw £100,000 annually from England for that one article. Even in 1763 it still brought £500, but soon fell, and has never risen again to the same value. During the present century the price has varied between £60 and £300, seldom falling to the lowest rate, and rarely exceeding £150. Mr Scoresby reckons the price in the five years ending 1818, at £90, while at present (July, 830) it is stated from the different ports to be from £160 to £180. This is for what is called the *size*-bone, or such pieces as measure six feet or upwards in length; those below this standard are usually sold at half-price. It may appear singular that whalebone should rise while oil has been so decidedly lowered; but the one change, it is obvious, causes the other. Oil, being the main product of the fishery, regulates its extent, which being diminished by the low price, the quantity of whalebone is lessened, while the demand for it continuing as great as before, the value consequently rises.

The whale-fishery, for one ship and one season, is a complete lottery, the result of which, according to the skill and good fortune of the persons employed, fluctuates between a large profit and a severe loss. Sometimes a vessel is so unlucky as to return *clean;* another brings only one fish; while eight or nine, producing about ninety tuns of oil, are considered necessary to make an average voyage. There are fortunate instances of a much larger produce. The greatest cargo ever known by Scoresby to have been brought from the northern seas was that of Captain Souter, of the Resolution of Peterhead, in 1814. It consisted of forty-four whales, yielding 299 tuns of oil, which, even at the reduced rate of £32, sold for £9568, raised by the whalebone and bounty to about £11,000. In 1813, both the elder and younger Mr Scoresby brought cargoes, less in quantity, indeed, but which, from the oil selling at £60 per tun, yielded a still greater return. The former, in the course of twenty-eight voyages, killed 498 whales, whence were extracted 4246 tuns of oil, the value of which and of the whalebone exceeded £150,000; all drawn by him out of the depths of the northern ocean.

The Dutch have published tables, exhibiting the results of their fishery for the space of 107* years, between 1669 and 1778, both inclusive. During that period they sent to Greenland 14,167 ships, of which 561, or about four in the hundred, were lost. They took 57,590 whales, yielding 3,105,596 quardeelen† of oil, and 93,179,860 pounds of bone, which yielded a value of £18,631,292.‡ The expense of fitting out the ships amounted to £11,879,619. Value of ships lost £470,422. Expense of preparing the oil, bone, &c., £2,567,109. Total expenses £14,917,150;

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* The years 1672, 1673, and 1674, are not included, the war with France having caused a suspension of the fishery.

† A quardeel of oil contains from 18 to 21 stekans, or from 77 to 90 imperial standard gallons; and 100 Dutch pounds are equal to 109 lb. avoirdupois nearly.

‡ In converting the Dutch estimates into English money, the florin is valued at 20½d. sterling.

leaving a profit of £3,714,142. The Davis's Strait fishery, between 1719 and 1778, employed 3161 vessels, of which 62 were lost. The produce was £4,288,235, which, deducting £3,410,987 of expenses, left a profit of £877,248. The Greenland fishery would thus have yielded a profit of about 25 per cent., and the Davis's Strait of about 26 per cent.; but it may be observed, that the Dutch in their estimate of expenses have not included the original cost of the vessels. In the subsequent years, from 1785 down to 1794, the number of ships was reduced to sixty, and the trade is said to have been carried on with absolute loss.

The British fishery has lately yielded a produce and value much exceeding that of the Dutch during the period of its greatest prosperity. In the five years, ending with 1818, there were imported into England and Scotland 68,940 tuns of oil, and 3420 tons of whalebone; which, valuing the oil at £36, 10s., and the bone at £90, with £10,000 in skins, raised the entire produce to £2,834,110 sterling, or £566,822 per annum. The fishery of 1814, a year peculiarly fortunate, produced 1437 whales from Greenland, yielding 12,132 tuns of oil, which, even at the lower rate of £32, including the whalebone and bounty, and added to the produce from Davis's Strait, formed altogether a value of above £700,000.

The following has been furnished to us from an authentic source as the result of the fishery of the year 1829, distinguishing the ports:—

Ports.	No of Ships.	Tonnage.	Fish.	OIL.	BONE.	
				Tuns.	Tons.	Cwt.
Aberdeen........	11	3322	84	1171	63	14
Berwick..........	1	309	11	147	8	16
Dundee	9	3031	77	1005	54	9
Hull	33	10,899	339	3982	235	19
Kirkcaldy	4	1261	51	649	37	0
Leith.............	7	2393	71	862	48	4
London	2	714	2	32	2	3
Montrose	4	1301	39	481	27	11
Newcastle	3	1103	45	541	29	10
Peterhead........	12	3429	118	1445	78	16
Whitby	3	1050	34	357	21	8
Totals...	89	28,812	871	10.672	607	10

ESTIMATED VALUE.

10,672 tuns[*] of oil at £25..............	£266,800
607½ tons whalebone at £180........	109,350
	£376,150

In the Commercial Tables presented to the House of Commons in 1830, the entire proceeds of last year are stated at £428,591, 6s. 6d.; but this, of course, includes also the southern fishery. Of this amount there were exported to foreign countries, *oil* to the value of £73,749, 10s. 9d., and *whalebone* amounting to £40,666, 15s. 6d.; making in all, £114,416, 6s. It may be mentioned, that this trade is now carried on entirely without legislative encouragement, the bounty having ceased to be granted since the year 1824.

There has also been a somewhat singular change in the ports from which the fishery is chiefly carried on. In London were undertaken all the discoveries which led to its establishment; and for some time a complete monopoly was enjoyed by the great companies formed in that city. Even between the years 1780 and 1790, the metropolis sent out four times the number of vessels that sailed from any other port. It was observed, however, that her fishery was on the whole less fortunate than that of the new rivals which had sprung up; and her merchants were so much discouraged, that, in Mr Scoresby's time, they equipped only seventeen or eighteen vessels. They have since almost entirely abandoned the trade, employing last year and the present not more than two ships. Hull early became a rival to London, having sent out vessels at the very commencement of the fishery. Although checked at first by the monopoly of the great companies, as soon as the trade became free, she prosecuted it with distinguished success. In the end of the last century that town attained, and has ever since preserved, the character of the first whale-fishing port in Britain. Whitby engaged in this pursuit in 1753, and carried it on for some time with more than common success; but her operations have since been much limited. Liverpool, after embarking in the undertaking with spirit, has now entirely relinquished it. Meantime the eastern ports of Scotland have steadily carried on, and even extended their transactions, while those of the country at large were diminishing. The increase has been most remarkable at Peterhead; and indeed this town, as compared especially with London, must derive a great advantage from avoiding, both in the outward and homeward voyage, 600 miles of somewhat difficult navigation.

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[*] It may be observed that, in all these statements, the measure employed is the tun of 252 old wine gallons, equal to 209$\frac{3}{16}$ imperial standard gallons.

The following summary has been collected from Mr Scoresby, as the average quantity of shipping fitted out in the different ports for nine years ending with 1818; and the comparison of it with the number sent out in 1830 will show the present state of the trade :—

		Average of 1810-18.	1830.
ENGLAND,—	Berwick,	$1\frac{7}{9}$	1
	Grimsby,	$1\frac{1}{9}$	0
	Hull,	$53\frac{1}{9}$	33
	Liverpool,	$1\frac{8}{9}$	0
	London,	$17\frac{8}{9}$	2
	Lynn,	$1\frac{1}{9}$	0
	Newcastle,	$4\frac{7}{9}$	3
	Whitby,	$8\frac{8}{9}$	2
		$91\frac{5}{9}$	41
SCOTLAND,—	Aberdeen,	$10\frac{8}{9}$	10
	Banff,	$\frac{8}{9}$	0
	Burntisland,	0	1
	Dundee,	$7\frac{5}{9}$	9
	Greenock,	$\frac{8}{9}$	1
	Kirkcaldy,	$\frac{7}{9}$	5
	Kirkwall,	$\frac{6}{9}$	0
	Leith,	$8\frac{7}{9}$	7
	Montrose,	$2\frac{7}{9}$	4
	Peterhead,	$6\frac{8}{9}$	13
		$40\frac{1}{9}$	50
	Total,	$131\frac{6}{9}$	91

The following list of the ships, sent out in 1830, with the tonnage and masters, may interest some classes of readers :—

HULL—33.

	Tonnage.
Abram, *Jackson*	319
Alfred, *Brass*	322
Andrew Marvel, *Orton*	377
Ariel, *Rogers*	340
Brunswick, *Blyth*	357
Comet, *Woodall*	311
Cumbrian, *Munroe*	374
Dordon, *Linskill*	285
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Everthorpe, *Johnston*	351
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Ingria, *Wilson*	316
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Lord Wellington, *Harrison*	354
Mary Frances, *Coldray*	385
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William, *North*	350
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In all, ninety-one ships,—four of which, marked thus for Greenland, all the others for Davis's Strait.

CHAPTER X.

Arctic Geology.

The Geology of Spitzbergen, of East or Old Greenland, and the countries examined and discovered by Ross, Parry, Scoresby, and Clavering, although as yet but imperfectly known, is far from being uninteresting. It exhibits the same series of rocks, and the same general arrangements, as occur in other countries, the geognostical structure of which has been thoroughly explored: The fossil organic remains which, in all parts of the world, afford so much information in regard to the former condition of the climate, seas, animals, and vegetables of the globe, are not wanting in these remote and desolate regions; and, lastly, the Arctic Geology has afforded to the mineralogist specimens of many of the rarer and of some of the more precious minerals and ores:—

1. *North Cape, Cherie Island, Hope Island, The Thousand Islands, Spitzbergen, and Ross's Islet.*

North Cape.—The great primitive land of Scandinavia continues onward to the extreme point of Norway; but in this high latitude some new formations make their appearance among the older. The *sandstone-quartz* of Alten has been known since the travels of the celebrated Baron Von Buch. On the east, towards the Russian dominions, there is a considerable tract which deviates more from the primitive formation than the sandstone-quartz of Alten does. *Sandstone* and *conglomerate* extend across the subjacent gneiss in a horizontal position. These evidently-secondary rocks probably belong to the old red sandstone formation of some authors. Hence, in Finmark we find ourselves on the edge of a great *secondary basin*.

Cherie Island.—The first land which rises above the level of the ocean in the Arctic sea, beyond the North Cape, is the small Cherie Island (Bear Island), about 10 miles long, in north latitude 74° 30′, long. 20° E., which is entirely composed of secondary rocks horizontally stratified, and cut perpendicularly on the coast into cliffs. The principal rocks are *sandstone* and *limestone*, in which veins of leadglance, or sulphuret of lead, sometimes containing native silver, occur. The limestone abounds in shells in a fossil state; but shells very different from those that at present inhabit these northern seas: the sandstone contains a bed of *coal*, from two to four feet thick,—a fact subversive of that opinion which maintains that coal is wanting in Arctic countries. In Scoresby's drawing of Cherie Island three conical hills are represented; these, in all probability, are of igneous origin, probably secondary trap.

Hope Island and The Thousand Islands.—Farther towards the north the depth of the sea is so inconsiderable and unvarying, that seamen, after seeing the horizontal strata of Cherie Island, conclude, that, in their course northward, they sail first over the horizontal basis of Cherie Island, and next over strata which are visible in Hope Island and the Archipelago of The Thousand Islands. The strata visible in Hope Island and the archipelago of The Thousand Islands are said to be of *blackish clay-slate*. *Hope Island*, situate on the south coast of Edge's Island, lies in N. lat. 76° 20′ and longitude 20° E. It is nine leagues long, but scarcely a mile broad, and lies N.E. by E., and S.W. by W. It consists of five mountains; the northernmost one is the highest; and those succeeding diminish gradually in size. The Thousand Islands is a large group of small isles interposed between Hope Island and the south coast of Edge's Island.

Spitzbergen.—This large island, although not the most northern known land, is nearly so. It lies between latitudes 76° 30′ and 80° 7′ N., and between the longitudes [illegible]° and 22° E. On taking a general view of this island, the principal object that strikes the eye are numberless mountain-peaks, ridges, and precipices, rising immediately from the sea often to a height from 3000 to 4500 feet above the sea-level. The various brown, green, and purple tints of the land, as seen from a distance, are strikingly contrasted with the snow-capped summits, ridges, and acclivities, and the valleys filled with snow or with glacier-ice; which latter often extend downwards to the coast, forming splendid and lofty icy-cliffs, from 100 to 400 feet high. On the east coast are two large islands, viz. *Edge's Island* and *North-east Land*.

On approaching towards the west side of *Stans-foreland*, on the east coast of *Edge's* Land or Island, between 77° and 78° north latitude, the lowest rock is a coarse *granular trap*, split by means of vertical rents into imperfect columns. This bed forms a flat extent of coast of about ten miles and a quarter broad, and forty-one miles long; and is the base or fundamental rock of an alternation of *fine granular sandstone,* an arenaceous *marl-slate,* compact *siliceous limestone,* and frequent repetitions of the trap-rock. Organic remains were not met with either in the sandstone or limestone by Professor Keilhau; but in some specimens collected at Cape Faneshaw, in that part of Spitzbergen named *New Friesland,* by the officers of Captain Parry's expedition, we noticed silicified *madrepores, retepores, orthoceratites, terebratulites,* and *cardites.* This same formation extends to north latitude 80°, and is conjectured by Keilhau to form the greater part of East Spitzbergen. It is true that some boulders of granite were met with, but these may have come from the great primitive chain of West Spitzbergen. Professor Keilhau found an interesting deposite of *shell-clay* in Stansforeland, in which the same kinds of fossil-shells were found as in a similar clay on the southern coasts of Norway. This deposite extends onwards nine and a half miles from the shore, and rises 100 feet above the present level of the sea. Bones of whales have been seen in The Thousand Isles, at a considerable height above the level of the sea, and probably imbedded in this *shell-clay.* Are we to infer, from the situation of this modern clay, that Spitzbergen has risen from the bottom of the sea at a comparatively recent period? Limestone, like that at Cape Faneshaw, occurs in the island named the *North-east Land,* on the east coast of Spitzbergen. The officers of Captain Parry's expedition also found granite there. The west and north coasts of Spitzbergen are composed principally of older rocks, viz.

primitive and sometimes transition rocks. The primitive rocks of West Spitzbergen appear at the *South Cape* in latitude 76½°. They are vertical strata of mica-slate, with numerous beds of quartz, ranging from north-east to south-west. In *Horn Sound* and *Bell Sound* these rocks form the high land; and, to judge from the form of the mountains, these or other primitive rocks ascend higher on the west coast. The primitive rocks near South Cape appear in part overlaid with the *shell-clay*. A new formation of red sandstone and gypsum occurs westward along the seacoast in fiords under the high chains, and also in small low islands which lie in front of the coast. In the year 1826 sea-horse fishers from Finmark brought *sixty tons of coal* from Ice Sound, in north latitude 78°, to Hammerfest in Norway; and we are informed by Scoresby, that the coal is so easily procured, that many of the Dutch fishers, a few years ago, were in the habit of laying in a stock of this useful mineral, for fuel on the passage homeward. The coal of Spitzbergen, which extends beyond north latitude 79°, resembles in some places cannel coal; in others it is brown coal or lignite. Scoresby, a little to the north of north latitude 79°, at Mitre Cape, observed the hills to be composed of gneiss, mica-slate, and limestone,—and in King's Bay, a little to the south of this cliff, on the coast, natural arches of marble. On the north coast of Spitzbergen, in some points, as at Red Beach, secondary rocks of red sandstone, probably new red sandstone, occur; but the prevailing rocks are of an older date, being principally primitive, with less frequently rocks of the transition class. The primitive rocks mentioned in Parry's narrative are granite, gneiss, mica-slate, hornblende-slate, primitive limestone or marble, quartz-rock, dolomite marble, chlorite-slate, and clay-slate. In the mica-slate *precious garnets* were frequently met with. The transition-rocks were principally clay-slate, quartz-rock, and limestone. In some points alluvial deposites were met with, and *brown coal* or lignite, either of new secondary, or of tertiary formation, was noticed.

Moffen Island, a small low island, lying on the north side of Spitzbergen, in north latitude 80° 1′, longitude 12° 43′ east, was visited by Mulgrave, who says it had not been noticed by the older navigators. It may be of new formation, and, as Scoresby remarks, has probably been thrown up by the currents from each side of Spitzbergen meeting. It is of a roundish form, about two miles in diameter, and has a shallow lake in the middle. The lake, when Scoresby saw it, was frozen over, except thirty or forty yards round the edge, and this near the end of July. The whole island is covered with gravel, and without the least vegetation. *It is but a few feet above the level of the sea.* The only piece of drift-wood found on it by Mulgrave, which was about three fathoms long, and as thick as the mizen-mast of a ship, had been thrown over the sea-beach, and lay near the lake. Captain Parry landed on several islands on the northern coast, viz. *Low Island*, about seven miles long, which appeared composed of transition quartz-rock; *Walden Isle*, on which were found primitive granites, quartz-rock, and gneiss; and *Ross's Islet*, a remarkable spot, the most northern known land of the globe, being situated in north latitude 80° 48½′, he found to be composed of *grey and reddish granite-gneiss, which is very coarse granular, occasionally porphyritic, with imbedded precious garnets; also, a flesh-red variety of the same rock.*

Remarks.—From the preceding details, it appears that Spitzbergen and its neighbouring isles afford rocks belonging to five of the great classes admitted by geologists,—namely, primitive, transition, secondary, tertiary (?), and alluvial. No true volcanic rocks are mentioned by authors. Ores are of rare occurrence, small portions of iron-pyrites and of clay iron-stone being the only metalliferous minerals enumerated. The dolomite-marble of Hecla Cove, mentioned by Parry, agrees in colour, size of grain, and other characters, with the statuary marble of Italy. In these islands the precious garnet is met with. Its occurrence on Ross's Islet, and its known distribution in other countries, shows that the *precious garnet, of all the gems, has the widest geographical range, extending, in the northern hemisphere, from the equator to the high latitude 80° 48½′ north.*

Jan Mayen's Island.—This island, according to Scoresby, is situated between the latitudes of 70° 49′ north, and 71° 8′ 20″ north, and between the longitudes of 7° 26′ and 8° 44′ west. It is about ten leagues long from north-east to south-west, and is in no place above three leagues in breadth. The peak of Beerenberg, the highest summit in the island, Scoresby found to be 6870 feet above the sea, consequently higher than any of the summits in Spitzbergen and Greenland. It was seen by Scoresby at the distance of 100 miles. The following account of the geognosy of the only part of the island hitherto examined is given by Scoresby, and we know it is correct, having in our possession the specimens collected during the excursion:—

"I left my ship," says Captain Scoresby, "at three quarters past one in the morning, accompanied by Captains Jackson and Bennet, whose ships were near at the time, and landed at half-past two, amidst a considerable surf, on a beach covered with a coarse black sand. This sand, which formed a very thick bed, covered over an extent of two or three miles, and about a furlong in breadth. It was a mixture of *iron sand*, *augite*, and *olivine* or *chrysolite*. The black parts, which were very heavy, and readily attracted by the magnet, had an appearance exactly like gunpowder. After a few feet rise, forming a sea-bank of black sand, the strand proceeded inland on a horizontal line for about a fourth of a mile, where it was terminated by irregular cliffs. The strand appeared to have been occasionally covered with the sea, as it was strewed with drift-wood, part of which was tolerably good timber, and the rest bruised and a little worm-eaten. I had not advanced many paces before I observed signs of a volcano. Fragments of *compact* and *vesicular lava* were met with at every step; blocks of burned clay were next met with; and, nearer the cliff, large masses of red clay, partly baked, but still in a friable state, occurred in great abundance. Numerous pointed rocks, probably of the trap formation, were projecting through the sand. One of these, which was *vesicular basalt*, had numerous grains and crystals of augite embedded in it. Along with these was a rock nearly allied in appearance to the celebrated millstone or vesicular basalt of Andernach. After leaving the seashore, I perceived no other mineral but such as bore undoubted marks of recent volcanic action, viz. *cinders, earthy slag, burnt clay, scoriæ, vesicular lava.* The place from whence these substances appear to have been discharged being near, we attempted to reach it. In performing the ascent, the steepness of the hill and the looseness of the materials made the undertaking not a little arduous. We frequently slid backwards several paces by the pieces of lava giving way beneath our feet; in which case the ground generally resounded as if we had been travelling on empty metallic vessels or vaulted caverns. The baked clay, and other loose rocks, consisted chiefly of large masses at the bottom of the hill; but about the middle of the ascent these substances were in smaller fragments. Towards the top, blocks of half-baked red clay, containing many crystals of augite, were again met with; and about the southern part of the summit a rugged wall of the same sort occurred, giving the mountain a castellated form of no small magnificence. On reaching this summit, estimated at 1500 feet above the sea, we beheld a beautiful crater, forming a basin of 500 or 600 feet in depth, and 600 or 700 yards in diameter. It was of a circular form, and both the interior and the sides had a similar inclination. The bottom of the crater was filled with alluvial matter to such a height, that it presented a horizontal flat of an elliptical form, measuring 400 feet by 240. A subterranean cavern penetrated the side of the crater at the bottom, from whence a spring of water issued, which, after running a short distance towards the south, disappeared in the sand. From this eminence we had a most interesting prospect. Towards the north appeared Beerenberg, now first seen free from clouds, rising in great majesty into the region of perpetual frost. At the foot of the mount, on the south-east side, near a stupendous accumulation of lava, bearing the castellated form, was another crater of similar form to the one described above. Towards the south-west the utmost extent of the island was visible; while towards the north a thick fog obscured the prospect, which, as it advanced in stately grandeur towards us, gradually shrouded the distant scenery, until the nearer mountains were wrapped in impenetrable gloom. The sea at the same time was calm, the sun bright, and the atmosphere of half the hemisphere without a cloud. Excepting the interest excited by the volcano, Beerenberg sunk every other object into comparative insignificance. A rocky hill, with a precipitous side towards the sea, lying a little to the westward, I descended towards it from the ridge of the crater, with the expectation of finding some other kind of rock than what had yet been met with. It was found to consist only of a cliff of yellowish grey friable earth or clay, in which crystals of augite, along with black roundish granular pieces of basalt, lay embedded. A piece of iron, which appeared to have been derived from ironstone by a smelting process conducted in the furnace of nature, was found near the volcanic mount. Being very cumbrous, it was laid aside by our party as we ascended, and unfortunately left behind by us when we quitted the shore. The cliffs here afforded but few specimens of plants. Indeed, we travelled a considerable distance before we could perceive the least sign of vegetation; as we advanced, however, we met with tufts of plants in full flower, scattered widely among the volcanic rocks; but, under the last cliff we visited, the variety was greater and the specimens more vigorous. Among the plants we recognised rumex digynus, saxifraga tricuspidata, and oppositifolia arenaria peploides, silene acaulis, draba verna &c. We returned to the ships at six in the evening. A fishing party which I sent out, proving unsuccessful in the offing, approached the shore about two miles to the eastward of the place we visited, where, though the surf was very considerable, and the strand very contracted, they effected a landing. They observed much drift-wood, a boat's oar, a ship's mast, and some other wrought wood, scattered along the shore. Every rock they noticed, and all the specimens they brought away, bore the same volcanic character as those I observed. Near some large fissures, which here and there occurred in the rocky and precipitous cliff, immense heaps of lava were seen, which appeared to have been poured out of these chinks in the rock. Cinders, earthy slag, iron-sand, and fragments of trap-rocks, covered the beach and so much of the cliff as they had an opportunity of examining. The volcano discovered in this excursion I ventured to name Esk Mount, after the ship I commanded, and the bay where we landed Jameson Bay, in remembrance of my friend Professor Jameson."

Captain Scoresby farther remarks, that Esk

Mount appears to have been in action in the spring of the following year; for, on the 29th of April, 1818, being off Jameson Bay, he observed near to Esk Mount considerable jets of smoke discharged at intervals from the earth. The smoke was projected with great velocity, and seemed to rise to twice the height of the land, or about 4000 feet. Captain Gilyott, a Greenland fisher, also observed the same appearance, with this addition, that once he noticed a shining redness resembling the embers of an immense fire. This fact serves to account for some strange noises heard by the seven Dutch seamen who attempted to winter here in the year 1633-4. In the beginning of the night of the 8th of September, in particular, they "were frightened by a noise as if something had fallen very heavy on the ground; but saw nothing." This, instead of being the fall of an iceberg, as some have supposed, was probably a volcanic phenomenon.

3. *Old Greenland.*—This extensive land, which, according to some, is a continuation of the continent of America, while others view it as a group of large islands, extends from north latitude 59° 14′, to 72° 36′ north latitude. The few details regarding its Geology we owe to Giesecke, who spent many years on the west coast,—Scoresby, who explored the east coast,—and Captain Ross, who sailed to the top of Baffin's Bay.

East Coast of Greenland.—This iron-bound coast is barren, rugged, and mountainous; and even in the warmer seasons of the year but few animals or vegetables assist in varying the monotonous and dreary scene. The average elevation of the coast is about 3000 feet. Several mountains measured by Scoresby on the Liverpool coast were found to be 4000 feet; and Werner Mountains in Davy Sound were estimated, by the distance at which they were seen and the elevation they assumed above the ordinary mountains, to be 6000 feet. In the interesting account of the exploratory voyage of a late distinguished officer, Captain Clavering, published in the ninth volume of the New Edinburgh Philosophical Journal, it is stated, that on the coast to the northward of the part surveyed by Scoresby,—that, namely, examined by Captain Clavering,—the mountains are from 3000 to 4000 feet high. Scoresby's survey extended particularly from Cape Barclay and Knighton Bay, in about north latitude 69°, to Cape Parry in about north latitude 72° 30′; that of Captain Clavering from Cape Parry to an island under north latitude 76°: the coast downwards to Staaten Hook and Cape Farewell to about north latitude 59° 30′, is in part described by Crantz, but much of it is entirely unknown.

The tract examined by Scoresby appears to be principally of primitive rock. Secondary rocks also occur, but the transition are the least frequent. On the beaches, and at the head of friths, alluvial deposites were noticed.

The primitive rocks noticed were, granite, gneiss, mica-slate, hornblende-slate, syenite, and clay-slate. These rocks exhibit in that remote region the same varieties of structure as those on the west coast of Greenland, and these again do not differ from the primitive rocks of Britain and other countries; thus affording another proof of the uniformity of character, similarity of position, and universality of distribution of primitive rocks in all parts of the world. Judging from what is known of the embedded minerals on the west coast of East Greenland, and reflecting on the agreement of the rocks, both on the east and west sides of the country, we may infer, that if Scoresby had had leisure for more minute investigation, his scientific zeal would have been rewarded by the discovery of the hitherto rare *cryolite*, the *sodalite*, and *allanite*, with magnificent *tourmalines* and *garnets*, interesting varieties of *zircon*, splendid specimens of *hyperstene*, the remarkable *dichroite*, and with all the species of the *felspar* genus. There does not appear any reason why the ores of iron, lead, tin, and copper of the west coast should not also occur in the same rocks upon the east; and the fine displays of *apatate, calcareous spar, fluor spar*, and of other simple minerals on the west coast, which have been a source of so much instruction and delightful contemplation to the scientific observer, may in some future voyage present themselves in the newly-discovered countries to the eye and the intelligence of the naturalist. The specimens of *transition clay-slate* picked up by Scoresby, prove the existence of rocks of that class in Greenland, and thus add a new feature to its geognosy; for Giesecke does not enumerate any of the slates he met with as belonging to the transition class. This fact is also a further proof of the wide distribution of these rocks; and shows, in opposition to certain speculative views, that they are not confined to a few narrow corners of the globe, but, like granite, gneiss, &c., may be considered as occurring in most extensive tracts of country, and that, therefore, the series is to be associated with the universal formations. We do not know any other examples of transition rocks having been found in so high a latitude. The *secondary rocks* met with are referable to two formations, one aqueous or Neptunian, the other Plutonic or igneous; the Neptunian rocks belong to the *first secondary sandstone*, or *coal-formation*,—the other to the *secondary trap and porphyry series*. This coal-formation does not occur on the west coast, and was met with for the first time in Greenland by Scoresby. It is the same formation as that which abounds all around Edinburgh; in short, it is that important deposite in which are situated all the great coal-mines in Scotland and England. It was met with only in *Jameson's Land*, where it forms the principal deposite, and gives to that country its peculiar characters; thus affording another example of the connexion of the general and particular forms of the surface of a country with its geognostical structure and composition. This formation always contains impressions and casts of plants which have a tropical aspect,—a circumstance of high interest when combined with the Arctic situation of the coal. The coal-formation in Melville Island, in north latitude 75°, where the summer lasts but a few weeks, I found, on examining a series of specimens, to contain various tropical-looking fossil plants resembling those met with in the coal-fields of Britain; and as the same formation occurs in Jameson's Land, in north latitude 71°, it is very probable that future naturalists will detect, in its strata, plants of a similar nature. Remains of plants with tropical characters, evidently in their native place of growth, under the 75° north latitude, is a fact which naturally leads to very interesting discussions in regard to the ancient forms of the land, the former state of the climate, and consequently to the early condition of the animal and vegetable kingdoms of Arctic lands. The coal-formation of Jameson's Land, at *Neill's Cliffs*, exhibits a splendid display of secondary trap-cliffs, as is so often the case in the middle division of Scotland.

The secondary trap-rocks,—all of which are more or less of an igneous origin, and the consideration of which is so importantly connected with the position of the neighbouring strata, the form of the surface, and the elevation of that surface above the waters of the ocean,—occur at Traill Island, forming, apparently, nearly its whole mass. These rocks are principally greenstone, and claystone, and felspar porphyries.

Neither Captain Clavering, nor Captain Sabine, who accompanied him, appear to have bestowed any attention on the Geology of the country surveyed from Cape Parry to north latitude 76°, the most northern land of Greenland seen by Clavering, as all we obtain from their reports is simply, that the land was mountainous, from 3000 to 4000 feet high, and principally composed of trap-rocks.

West Coast of Greenland.—The west coast of this forlorn region is equally mountainous, rugged, and desolate as the east. The country, even when but inconsiderably elevated above the sea, is covered with snow, or encased in ice. In the warm season of the year, *rivers* appear, but few in number and of inconsiderable size, which are supplied by the melting of the snow and ice. The same also is the case with the *lakes*, which in some parts are of considerable size. *Springs* then also burst forth, but in winter the greater number cease. Giesecke mentions a tidal spring, which rises and falls with the tide; and a *hot spring*, which neither cold nor storm interrupts, flows all the year round with a temperature of 104° of Fahrenheit. This hot spring occurs in the south-east of the coast, in the island of Ounartok, in north latitude 60°, and is highly interesting, as showing that that igneous agency, which was formerly exerted so extensively in this country, is still at work beneath the surface.*

The large islands that skirt this coast, of which the most considerable is *Disco*, are, like the continent, composed of barren rocks, and of valleys filled with eternal ice; while the smaller islands are formed of roundish elevations and hills, the base of which are inhabited by numberless sea-fowl.

The little we know of the Geology has been obtained by examining the seacoast, or tracts removed but a short distance from it,—the interior and higher parts of the country being inaccessible, owing to the deep and constant cover of ice and snow.

Four classes of rocks occur, viz. primitive, secondary, tertiary, and alluvial. The *primitive Neptunian rocks* are, some granites, gneiss, mica-slate, white-stone, clay-slate, green-stone, and limestone; the *primitive igneous rocks*, are granite and porphyry. These rocks exhibit the usual relations, the gneiss appearing as the under or fundamental rock, supporting the white stone, mica-slate, and clay-slate, with their limestones and greenstones; while certain granites, syenite, and porphyry, rise through the older or Neptunian rocks. In these rocks various beautiful and curious simple minerals occur, namely, *cryolite, allanite, sodalite, thulite;* also numerous *precious garnets, rock-crystal, rose-quartz, dichroite, hyperstene, apatite* or phosphate of lime, *zircon, fluor-spar, calc-spar, gold-like mica, magnetic iron ore, gadolonite, tin-stone, wolfram, arsenical* and *iron-pyrites, galena* or lead glance, *titanium,* &c. &c. Indurated talc and pot-stone are also met with. Of these lamps and kettles are made. Utensils made of these minerals are carried to some districts where they are not found, and are bartered for provisions, furs, &c. The Greenlanders, says Crantz, sometimes give them as presents to persons of distinction in Denmark, where they are highly valued, as it is thought that articles of food prepared in them are more delicate than when done in metallic vessels. It may here also be noticed, that the gold-like variety of mica was at one time taken for gold; and it is stated by Egede, that its appearance was so seducing, that two successive expeditions were sent from Denmark in the early part of the 18th century, in 1636, for cargoes of it, in the expectation of finding gold. Not discouraged by the first failure, a second ship was laden with it, which, after the most careful analysis, was found worthless.

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* The experiments of Cordier, detailed in the New Edinburgh Philosophical Journal, with the numerous details in regard to the temperature of springs and mines, go to support the idea, not of a *central heat*, but of a source of heat independent of that derived from the sun, situated in the *crust of the earth*.

The *secondary* and *tertiary rocks,* at present known to occur in this coast, are secondary or tertiary traps, or both, with slate-clay, limestone containing fishes, and limestone containing embedded *am-*

ber. These limestones and slate contain, or are associated with, beds of brown coal or lignite; in some kinds of brown coal *amber* also occurs. These newer trap-rocks, the amygdaloidal, varieties of which contain agate, jasper, calcedony, and green earth, have been traced from north latitude 69° 14′ to the top of Baffin's Bay, the furthest northern point reached by Captain Ross.* A splendid display of these rocks is presented in the large island named *Disco,* which is entirely formed of them. The *alluvial* depositions, which are of sand, gravel, clay, and rolled masses, occur on the seashore, or on the sides of the fiords; but they are not mentioned as appearing anywhere in great quantity. *Peat,* which is to be considered an alluvial formation, is met with in fenny places, interspersed with roots, branches, decayed wood, and withered grass. Much of the peat contains sea-shells, from which it is suspected that the sea washed over it at some distant period. No *wood grows,* but *drift-wood* is frequently obtained on the seacoasts, particularly in the southern and western parts.

4. *Barrow's Strait, Melville Island, Port Bowen.*—All that is known of the geology of these Arctic lands we owe to the Parry expeditions in 1819 and 20, and in 1821-2-3.

The east side of Baffin's Bay, or west coast of Greenland, as already mentioned, is composed principally of primitive and secondary rocks; on the west side of Baffin's Bay to the entrance of Lancaster's Sound, the predominating rocks were found to be primitive, viz., gneiss, mica-slate, and granite. In the latitude of the entrance of Lancaster's Sound, in Possession Bay, the rocks are granite, syenite, hornblende-rock, with disseminated precious garnets, and rocks of new red sandstone, with fibrous and granular gypsum. The north coast of Barrow's Strait, as far westward as the Polar Sea, is said to consist of limestone resembling mountain limestone. Both sides of Prince Regent's Inlet are formed of a compact limestone, which contains fibrous brown iron ore and a kind of brown coal. Its colours are ash-grey, yellowish-grey, and yellowish-brown. It affords about 20 per cent. of carbonate of magnesia, and is therefore a magnesian limestone. It contains imbedded masses of *chert-quartz.* The organic remains found in it were *entrochites, catinularia, speropore, turbinoliæ, favosites,* several species of *terebratulæ,* a *trochus,* a *turritella,*and an *orthoceratite.* This has been called *Port Bowen limestone;* its age has not been determined. Resting upon it there are thick beds of gypsum, containing selenitic, fibrous, and foliated varieties, which are connected with a slaty limestone, which is newer than the Port Bowen limestone. Byam Martin's Island appears to be composed of granite and red-coloured quartz-rock. A fossil dicotyledonous tree was found on the shore of this island. Melville Island is the most western point ever navigated in the Polar sea from the eastern entrance. It lies in north latitude 74° 26′, and west longitude 113° 46′. Its length is one hundred and thirty-five miles from east-north-east to south-south-west; its breadth forty or fifty miles. Granite, gneiss and syenite, were found in the vicinity of Winter Harbour, but the principal formations in the island, as far as the specimens brought allowed us to infer, appear to be *transition glance coal*, and the *first, or oldest secondary coal-formations*. The rocks of these formations observed there were the following: —1. White quartz-rock, sometimes micaceous, containing impressions of *trilobites*, belonging to the genus *asaphus*. Sandstone contain *trochi*, or joints of the stem of the *encrinus*, but the most frequent fossils in the sandstone were vegetable casts and impressions of species in some measure characteristic of the coal-sandstone, particularly *arborescent ferns*, resembling those which at present occur only in the tropical regions of the earth. *Slate-clay* and *clay-ironstone* were also found associated with the coal-sandstone ; one specimen of ironstone was found to contain a fossil *avicula*, named, by König, *Melvilliana*, in honour of Lord Melville. The secondary *coal* is more or less of a slaty structure : its colour is of a brownish black. It emits no unpleasant smell when burning, and leaves copious greyish-white-coloured ashes. It is quite a different coal from the brown coal of Disco, which contains amber. It would appear that the trilobite, or glance coal, is connected with quartz rock, while the secondary coal rests upon a limestone resembling the mountain limestone, containing bivalve shells and corallines, a species of terebratula, and the *Favosites Gothlandicus*. These deposites appear to be traversed by whin dykes or trap-veins.

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* Considerable masses of *meteoric iron* were found by Captain Ross, at Sowallick Point, in north latitude 76° 2′.

5. *Islands and Countries bordering on Hudson's Bay examined and partly discovered by Captain Parry.*—The lands bordering on Hudson's Bay, and the islands mentioned by Captain Parry, viz. Melville Peninsula, Vansittart Island, Baffin Island,

Winter Island, Cockburn Island, Southampton Island, &c., are not very much elevated above the level of the sea,—the average height is 800 feet, and the highest summits not exceeding 1500 feet. The valleys are narrow and rugged, and the cliffs sometimes display mural precipices of more than 700 feet high. The country is covered with ice and snow the greater part of the year, often exhibiting the most splendid colours and iridescences, and forms of the most picturesque description. The upper soil varies from a few inches to a foot in depth, beneath which the ground is frozen solid throughout the whole year. The rocks of which this country is composed vary in their nature; in some places primitive rocks predominating, in others those of the transition, or of the secondary classes; no tertiary rocks were met with, nor formations either of the ancient or modern volcanic periods. The primitive rocks enumerated and described are the following:—*Granite*, gneiss, mica slate, clay slate, chlorite slate, primitive trap, serpentine, limestone, and porphyry. In these rocks several interesting minerals occur, as the gems named *zircon* and *beryl*, also *precious garnet*, *actynolite*, *tremolite*, *diallage*, *coccolite*, *rock crystal*, *calc spar*, *rhomb spar*, *asbestus*, *graphite* or black-lead, *specular iron ore*, *magnetic iron ore*, *chrome ore*, or *chromate of iron*, *titanitic iron*, *common and magnetic iron pyrites*. The transition rocks are quartz-rock, old red sandstone, or red greywacke, common greywacke, and flinty slate. In them the following minerals were found; viz., *felspar*, *mica*, *chlorite*, *pale rose quartz*, *epidote*, *rock crystal*, *shorl*, *molybdena*, *iron glance*, *magnetic iron ore*, *copper pyrites*, *and iron pyrites*.

Of the secondary rocks, the only kinds met with were limestone, bituminous shale, and greenstone. No fossil organic remains were detected in any of the rocks of this series but the limestone, which afforded two genera of corals, viz. *caryophyllea and astrea*; one crustaceous animal of the *trilobite* genus; a *productus*, a *terebratula*, and species of the genera *nautilus*, *trochus*, and *orthocœras*. No extensive deposites of alluvial matters were met with. The most striking objects are the rolled masses or boulders, spread over some of the islands. Some islands, entirely composed of limestone, were strewed over with boulders, often of enormous size, of gneiss, granite, and quartz, although no hills of these rocks were within some hundred miles.

CONCLUDING REMARKS.

THE observations made in Cherie Island, Jan Mayen's Island, Spitzbergen, Old Greenland, and the various lands and islands first explored during the four Arctic expeditions, viz. that under Captain Ross, and the three under Captain Parry, afford the following general facts and inferences:—

1. That these miserable and almost uninhabited regions abound in primitive and transition rocks, and that although secondary rocks occupy considerable tracts, still, as far as is known at present, their extent is more limited than that of the older formations; that the alluvial deposites are not extensive; that true modern volcanic rocks occur only in Jan Mayen's Island; and that the only traces of tertiary strata were found in the sandstones, and clays, and

limestones connected with the new trap-rocks in Baffin's Bay.

2. That the Neptunian, primitive, and transition rocks, now forming islands of various magnitudes, were in all probability at one time connected together, and formed a more continuous mass of land than at present; and that on these formations were deposited the secondary limestones, sandstones, gypsum, and coal, and upon these again the tertiary rocks, and the still newer *shell-clay* of Spitzbergen: That these various kinds of primary, transition, secondary, and tertiary rocks and alluvial clays were raised above the level of the sea at different times through the agency of the igneous and volcanic rocks.

3. That in the course of time the land was broken up,—either suddenly or by degrees, or partly by sudden and violent action, and partly by the long-continued agency of the atmosphere and the ocean,—into its present insular form; and that, consequently, the secondary and tertiary formations were formerly in these regions more extensively distributed than at present.

4. That previously to the deposition of the coal formation, as in Melville Island and in Jameson's Land, the previously-existing, or older hills, supported a vegetation resembling that which at present characterizes the tropical regions. The fossil corals in the limestones, corals of which the prototypes are at present met with in the hot seas of the tropical regions, also intimate that, before, during, and after the deposition of the coal-formation, the waters of the Arctic Ocean were so constituted as to support polyparia, or corals, resembling those of the present equatorial seas.

5. That probably the ancient climates of the Arctic regions were connected in some degree with the former magnitude and form of the Arctic lands, and their relations to the magnitude and height of other countries.

6. That the boulders or rolled blocks met with in different quarters, and in tracts distant from their original localities, afford evidence of the passage of water across them, and at a period subsequent to the deposition of the newest Neptunian strata.

7. That possibly the distribution of the erratic blocks or boulders, was occasioned by the agitations in the ocean, caused by the upraising of certain lands.

8. That the black or common coal, the coal of the old or most abundant coal-formation, which some speculators maintain to be confined to the more temperate and warmer regions of the earth, is now proved,—by its discovery by Parry in Melville Island far to the west, and by Scoresby far to the east in Jameson's Land,—to form an interesting feature in the geognostical constitution of Arctic countries.

9. That the new red sandstone and gypsum found in tracts allow us to infer that they contain *rock-salt*.

10. That although few new metalliferous specimens have been found to gratify the curiosity of the mineralogist, yet the previous details show that valuable ores of iron, copper, lead, and tin, and also graphite, or black-lead, are met with.

11. That the gems, the most valued and most beautiful of mineral substances, are not wanting in the Arctic regions, as is proved by the occurrence

there of precious garnets, beryls, zircons. dichroites, and rock-crystals.

12. That the islands and lands described in the sketch exhibit the same general geognostical arrangements as occur in all other extensive tracts of country hitherto examined by the naturalist,—a fact which strengthens that opinion which maintains that the *grand features* of nature, in the mineral kingdom, are everywhere similar, and, consequently, that the same general agencies must have prevailed during the formation of the different groups of rocks of which the earth is composed.

THE END.

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